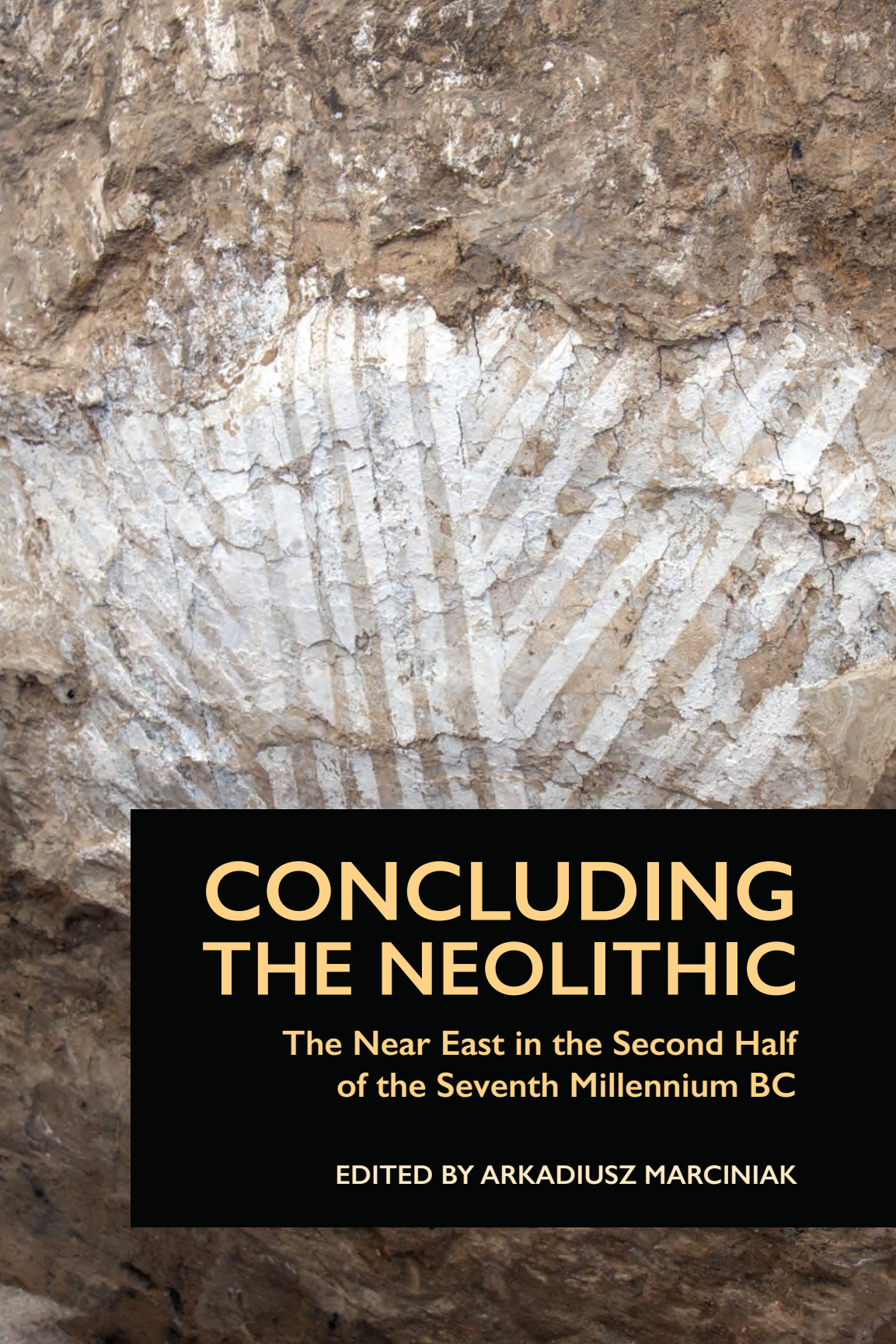




CONCLUDING THE NEOLITHIC

The Near East in the Second Half
of the Seventh Millennium BC

EDITED BY ARKADIUSZ MARCINIAK

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OF THE SEVENTH MILLENNIUM BC

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Contents

Introduction — <i>Arkadiusz Marciniak</i>	1
<i>The Levant and Northern Mesopotamia</i>	
The “8200 Cal BP Cold Event” in the Levant — <i>Ofer Bar-Yosef</i>	17
Tumultuous Times in the Eighth and Seventh Millennia BC in the Southern Levant — <i>Gary Rollefson</i>	41
The Nature of the Beast: The Late Neolithic in the Southern Levant — <i>A. Nigel Goring-Morris and Anna Belfer-Cohen</i>	61
Çatalhöyük and Sha’ar Hagolan: A Tale of Two Cities — <i>Yosef Garfinkel</i>	77
Transforming the Upper Mesopotamian Landscape in the Late Neolithic — <i>Olivier P. Nieuwenhuyse and Peter M. M. G. Akkermans</i>	101
<i>Central and Southwestern Anatolia</i>	
A History of the House at Late Neolithic Çatalhöyük — <i>Arkadiusz Marciniak</i>	137
The Transition between the East and West Mounds at Çatalhöyük around 6000 cal BC: A View from the West — <i>Eva Rosenstock, Jana Anvari, Ingmar Franz, David Orton, Sonia Ostaptchouk, Elizabeth Stroud, and Peter F. Biehl</i>	163
Exploring the Culture Landscape of Neolithic Hacilar (6500–6100 BC), Southwestern Turkey — <i>Ralf Vandam</i>	193
<i>Western and Northwestern Anatolia</i>	
Changing Ideologies in Community-Making through the Neolithic Period at Ulucak — <i>Özlem Çevik</i>	219
Adaptation as a <i>Constante</i> in Early Farming Village Economy: An Eight-Thousand-Year-Old Case — <i>Jacob Roodenberg</i>	241
An Entanglement Approach to the Neolithic of the Aegean Islands — <i>Burçin Erdoğan</i>	257
Early Farmers in Northwestern Anatolia in the Seventh Millennium — <i>Necmi Karul</i>	269

Barcın Höyük in Interregional Perspective: An Initial Assessment — <i>Rana Özbal and Fokke Gerritsen</i>	287
Early Farmers in Northwestern Turkey: What Is New? — <i>Mehmet Özdoğan</i>	307
Subject Index	329

Introduction

ARKADIUSZ MARCINIAK

The Neolithic is rightly regarded as a major threshold in the development of humankind. It marks the emergence of constituent elements of human existence that irreversibly transformed its nature. Among the most profound changes were the sedentary mode of life, domestication of plants and animals, aggregation of big groups in urban settings, new forms of social organization, and the development of a range of innovative technologies, in particular use of clay as a material for house construction and production of containers.

The previously dispersed and loosely bounded hunting and gathering groups were transformed into large social groupings inhabiting ever-growing urban centers. The forager mode of food procurement was replaced by food production based upon agriculture and husbandry organized in a wide range of forms. New technologies transformed the hitherto dominant dwelling structures from light shelters into solid multiroomed houses. The emergence of a set of new tools led to significantly more efficient food procurement and food-preparation strategies. These revolutionary developments are often referred to as the first Neolithic transition. The process was extended over a couple of millennia and its constituent elements appeared at different times across different areas of the Near East. The origin of the Neolithic, along with its different components, was and remains one of the most intensively and hotly debated issues in archaeology. A wide range of different theories and hypotheses has been proposed, alluding to all sorts of theoretical underpinnings. They have been published in uncountable numbers of scholarly books and essays in all possible languages as well as discussed at numerous conferences of different format and character (e.g., Bar-Yosef 2001; Belfer-Cohen and Goring-Morris 2012; Cauvin 2000; Flannery 2002; Harris 1996).

The process of transformation, consolidation, and integration of constituent elements of the Neolithic revolution has attracted far less attention. The same is true regarding the outcome of this complex process in the form of a new version of the Neolithic. As compared to the first Neolithic transition, this process was much shorter and took place in the final centuries of the Near Eastern Neolithic, that is, in the second half of the seventh millennium BC. The revolutionary

developments taking place in this period can rightly be labelled the Late Neolithic transition (see Marciniak 2016).

This volume aims to fill in an evident void in the study of this profoundly important stage in the development of the Neolithic in the Near East. It aims to provide a comprehensive presentation and analysis of the constituent components of this major threshold in the history of farming communities across different parts of the region, discern their major developmental trajectories, reveal parallel growths, identify discrepancies, and scrutinize diverse consequences and far-reaching effects.

The volume has three intertwined objectives. First, it intends to grasp and conceptualize the character of the Neolithic across different parts of the Near East in the final phase of its development, in particular in comparison to the situation in the preceding Early Neolithic. To this end, it aims to scrutinize the nature of the Late Neolithic transition and identify its major constituent elements. The second objective involves a comprehensive overview and analysis of the corresponding developments in subsequent areas of the Near East and aims at revealing similar trajectories and pointing out local idiosyncrasies. It also scrutinizes causes of and mechanisms for these profound transformations. Empirical evidence facilitating a recognition of these transformations, such as the settlement layout, site architecture, both domestic and nondomestic, burial practices, and a wide range of material culture will be presented and discussed at length. The final objective of the volume comprises a presentation of the aftermath of the Late Neolithic transition including the dispersal of local groups out of their original oecumene, exploitation of different ecological zones, developing relations with neighboring communities, and building up a network of dependencies and mutual relations in these newly developed circumstances.

The book is arranged geographically. It begins by addressing the targeted developments in the southern Levant and northern Mesopotamia, moving subsequently to central Anatolia and then to southwestern, western, and northwestern Anatolia. The authors of the book are leading specialists in the field. Their chapters reflect their own research perspectives and interests. Hence, they focus upon different aspects and dimensions of the processes taking place in the second half of the second millennium BC and discuss them in a broader diachronic and synchronic perspective. Read together, the contributions to the volume bring about a comprehensive and heuristically viable overview of the transformative character of the Late Neolithic in the Near East.

Grasping the Nature of the Late Neolithic Transition

The last centuries of the Near Eastern Neolithic, the period known as the Late Neolithic, are characterized by profound changes in major constituent components of

the human existence. In Upper Mesopotamia, it is defined as a transformative era that saw profound changes in settlement organization, modes of subsistence, religious practices, and the formation of local and supralocal identities (Nieuwenhuyse and Akkermans). It brought about institutionalization of socioeconomic modalities moving into the Halaf and related cultural settings (Özdoğan). The Late Neolithic also marks an important transition in the Lakes District (Vandam) and is clearly detectable at different sites, for example, Ulucak on the Aegean coast (Çevik). This transition also brought about major changes in the newly inhabited western parts of Anatolia, peripheral to the main areas of primary neolithization, marked by the emergence of small farming communities that each followed its own trajectory. It is also the time of crystallization of differences between the eastern and western parts of the Anatolian peninsula (Özdoğan).

The Late Neolithic is most often defined by changes in social arrangements of local groups, particularly evident when compared with the Early Neolithic. The latter period was dominated by communities living in large settlements (Çevik) that were held together with particular dynamics or ideologies that unified them and preventing intercommunal tensions. This pattern is discernible in the Levant, Upper Mesopotamia, and central Anatolia. These may have been in the form of extended families, sodalities, or neighborhood communities, and are reported from a number of sites dated to the late Pre-Pottery Neolithic or early Pottery Neolithic, such as Bouqras, Basta, Tell es-Sawwan, Hassuna, or Çatalhöyük (e.g., Flannery 2002; Düring and Marciniak 2005).

The Late Neolithic marks the emergence of individualized social units, most likely in the form of households, which became increasingly independent, both economically and spatially. They are discernible at different settlements from this period, such as Çatalhöyük in central Anatolia (Marciniak 2016) and the Aegean settlement of Ulucak, at least from the late seventh millennium BC onwards (Çevik). This shift is manifested by settlement architecture, subsistence, and manufacturing practices. Architectural remains exposed in all western Anatolian sites reveal a more or less homogenous distribution of similar households, every building being similar to the other, with no apparent markers of social stratification (Özdoğan).

The Late Neolithic is also defined by major changes in economy. The increasingly autonomous households established an integrated management and procurement system and an integrated farming-husbandry economy. The process also involved a shift from the extensive exploitation of large areas to the use of locally available resources (e.g., Marciniak 2016; Marciniak et al. 2015a). These changes are particularly visible in husbandry practices. Sheep flocks were herded and tended by family (or smaller group) shepherds, with less separation by age and sex (Russell et al. 2013). By maintaining herds relatively close to the settlement it would have been possible to include less skilled family members

such as children, or those only available for short work periods such as older family members or women with babies (Grayzel 1990: 49). At the Late Neolithic Çatalhöyük, changes in sheep husbandry are indicative of a high degree of arable/pastoral integration and dependence requiring a range of advanced managerial skills, such as controlling the breeding cycle, keeping herds near growing crops, and providing dry fodder, which is most effectively achieved by a more fragmented household-based society than large social groupings (Henton forthcoming). Additionally, the variability of animals increased over time as herders increasingly moved their separate flocks across a range of different territories around the settlement (Pearson 2013).

These significant changes in social organization as well as in economy and subsistence bases resulted in the break down of a distinction between sacred and secular and removal of symbolism from the domestic realm. The house was no longer the focal point of the cultural universe but served only as ordinary dwellings. This is manifested by the disassociation of burials from its domain and the emergence of extramural cemeteries. These developments in turn enhanced the autonomy and independence of the house (Marciniak 2008; Hodder 2014), facilitated dispersal of local groups out of their original oecumene, and resulted in exploitation of a range of previously uninhabitable ecological zones (Özbaşaran 2012).

Consequently, the Early Neolithic mode of life was ultimately transformed into a qualitatively distinct and culturally and demographically powerful version of the Neolithic. It involved a shift from a system in which people were squeezed into collective social and ritual structures to a fragmentation and dispersal of human groups across the landscape. Hence, the first half of the seventh millennium cal BC marks a major threshold in the history of human groupings in terms of new arrangements in social organization, flexible economic systems, diversified subsistence bases, as well as new forms of religious and ritual practices. These were accompanied by significant changes in material culture.

The culture-forming nature of the Late Neolithic, however, is not discernible in some areas. This is particularly the case in the southern and central Levant (Goring-Morris and Belfer-Cohen), where this period lacks new unique characteristics that justify its assignment as a separate and distinct cultural period. There was no chronological gap between Pre-Pottery (Early) and Pottery Neolithic (Late) and the latter period is rather short and insignificant. The major changes, corresponding to the Late Neolithic in other areas, only took place in the Chalcolithic, in particular in the Wadi Rabah phase.

The Late Neolithic in Comparative Perspective

The transformative processes contributing to the Late Neolithic transition extended over centuries. Viewed from a long-term perspective, it is estimated that

it took almost two millennia of slow, incremental change, punctuated by episodes of accelerated change culminating in the end of the seventh millennium BC (Nieuwenhuyse and Akkermans). While unique in its character, this period maintains continuous references to the past and older traditions predating 6500 BC. Almost every component of the material assemblage in northwestern Anatolia, except for adaptation of wooden-post architecture, is traceable to the primary core area from the preceding period, though the social or symbolic value attained might be different (Özdoğan). Similarly, the Yarmukian phase in the southern Levant, marking the first stage of the Late Pottery Neolithic, reveals numerous similarities with the later stages of the Early Neolithic, in particular the PPNB (Goring-Morris and Belfer-Cohen). While Early Neolithic Çatalhöyük East refers in many respects to Aceramic Neolithic Aşıklı Höyük, Early Chalcolithic Çatalhöyük West refers to its Neolithic predecessor (Marciniak et al. 2015b). In more general terms, the “advanced farming village,” the term used for describing the Late Neolithic situation, is often seen as the logical “end product” (Redman 1978: 176–77) of the agricultural transformations that began in the Early (“Pre-Pottery”) Neolithic.

While the constitutive elements of the Late Neolithic transition are deeply embedded in the past, its emergence was triggered by a combination of factors that to a considerable extent were set up differently in subsequent parts of the Near East. The major trigger of these processes was a catastrophic collapse of the megacities by the end of eighth millennium with considerable depopulation, particularly distinct in the southern Levant. It contributed to a movement of their inhabitants into the previously unoccupied eastern badia in Jordan’s Black Desert (Roleffson). An important trigger of these changes is often ascribed to new technologies. The adoption of ceramics around 7000 cal BC (e.g., Akkermans and Schwarz 2003; Tsuneki, Nieuwenhuyse, and Campbell, 2017) facilitated innovations in container technologies that in turn led to an intensification of secondary products exploitation and the establishment of social networks that interconnected dispersed village communities across Upper Mesopotamia, particularly towards the end of the sixth millennium BC, or Halaf period (Nieuwenhuyse and Akkermans). Another potentially important factor may have been health (Garfinkel), whereby increased population density at aggregated settlements caused a deterioration of overall conditions for their inhabitants. The sudden appearance of multiple burials may be indicative of poor health and possibly epidemics, including tuberculosis (Roleffson). Of a similar caliber may have been reduced space of the living conditions: buildings got reverted to single-room houses with dirt floors, where symbolic expressions were rare, as clearly see already at the PPNC settlement at ‘Ain Ghazal (6,900–6,500 cal BC) in the southern Levant.

The most hotly debated cause of the major transition in the Neolithic mode of life, however, remains climatic change, in particular the so-called “8200 cal

yr BP event" (e.g., Staubwasser, Weiss 2006; Weninger et al. 2006; Clare and Weninger 2015). The changing climatic conditions of the early Holocene played a significant role in the development of farming communities from the beginnings of Pre-Pottery Neolithic (Bar Yosef). However it is only the abrupt, adverse climatic change around 8,400/8,300 through 8,200/8,000 cal BP that arguably had a major impact on domestic subsistence, sometimes causing social turmoil on a regional scale. The apparent synchronicity of the later seventh millennium developments in settlement with the 8.2 ka abrupt climate event has led several scholars to argue for a strong causal role of climate change (Bar-Yosef). Initially, they hypothesized that this short-lived climate anomaly could only have had serious disastrous repercussions on Neolithic communities inhabiting the marginal Upper Mesopotamian landscapes (Staubwasser and Weiss 2006; Weninger et al. 2006).

The only direct evidence of changes in climate that originate from archaeological site comes from Çatalhöyük (Roffet-Salque et al. 2018). The abrupt 8.2 kyr BP climatic event was revealed in hydrogen isotopic compositions from animal fats preserved in pottery vessels. The local inhabitants reacted to these deteriorated conditions, which is particularly evident in a reorganization of herding practices. These included a reduction of cattle herd sizes accompanied by an increase in caprine herd sizes. The climate deterioration may have also led to food scarcity/dietary stress, as indicated by an increase in the degree of bone fragmentation for small and large ungulate grease and marrow-bearing parts as well as by a marked decrease in butchering efficiency and meat processing for both cattle and caprines.

In spite of scarce evidence in other areas, the results of this abrupt event are believed to have affected the course of technical, economic, and cultural developments. The immediate response to these rapidly deteriorating conditions was to dig wells, a technology known from Shillourokambos, Miloutkhia, Atlit-Yam, and Sha'ar HaGolan. However, this could have solved the problem of drinking water for humans and herds only when the water-table was not too deep for the available techniques (Bar-Yosef). Climatic change and prolonged culturally induced environmental degradation is believed to be responsible for the abandonment of many sites across the Levant and Anatolia. It included dislocations of populations requiring relocation to smaller communities but also massive migrations in others (Rollefson). However, a close reading of the available data suggests a more complex picture. A good number of Neolithic sites were possibly abandoned before the 8.2 cal BP event. At Tell Sabi Abyad, several key "adaptations" may in fact trace their roots to stratigraphic levels preceding those synchronizing with the climate event. Rather than causing these cultural changes, the climate anomaly appears to have accelerated trends that had already begun for reasons unrelated to climate change (Nieuwenhuyse et al. 2016).

Changes in the second half of the seventh millennium cal BC affected a majority of the domains of existence of Neolithic communities, albeit not all of them were equally significant or comparably discernible. Despite these idiosyncrasies, the Neolithic pathways were made of a number of distinct elements. Their profoundly transformative character, however, was not immediately evident.

As indicated above, one of the most significant changes had to do with economy and subsistence. Cattle exploitation dominant in the preceding period was reduced at the expense of steeply increased herding goats and sheep (Bar-Yosef). The pattern was clearly discerned at the settlements in northwestern Anatolia, in particular in Aktopraklık, Menteşe, and Fikirtepe (Karul). The history of domestic pig was significantly different (Arbuckle et al. 2014). It was never incorporated into Neolithic economies in central and northwestern Anatolia, where *Sus* remains were rare and comparable in size to early Holocene wild boar. At the same time, pigs and cattle represent larger portions of the animal economies in the Lakes District and western Anatolia. In southwestern Turkey, cattle and pigs together nearly match caprines in abundance (see also De Cupere, Duru, and Umurtak 2008: 372–75).

A mixed farming economy was particularly common in central and northwestern Anatolia. Farming-based agriculture and animal husbandry were adopted region-wide (Karul this volume and 2011). They were practiced from the beginning of the occupation of the settlement at Ilıpınar (Roodenberg). Economy of the inhabitants of Uğurlu on the Island of Gökçeada was based upon cereal crops dominated by einkorn wheat, emmer wheat, six-rowed barley, naked barley, and pea as well as domesticated animals, in particular sheep and goat (Erdoğan). This was supplemented by open-sea fishing and mollusc gathering, particularly at the settlements of Fikirtepe and Pendik. At the settlement at Barcın in this region wild taxa including boar, hare, deer, birds, fish, and molluscs were present only in very small quantities. Similarly, the cereals and pulses (lentils and peas) were of domesticated varieties, which were supplemented by wild resources like hazelnuts (Özbal and Gerritsen).

The Late Neolithic transition brought about significant changes in settlement architecture and material culture. The most recognizable changes are discernible in site architecture. They are attributed to transformations in social organization and the emergence of increasingly autonomous households. The size of the settlement at Tell Sabi Abyad decreased to between only 0.1 and 0.2 ha in extent, although it probably had several contemporaneous but spatially dispersed communities (Nieuwenhuys and Akkermans). This individuality is indicative of changes in the forms of house construction, as recognized at both Çatalhöyük East and West (Marciniak; Rosenstock et al.). The dominant form of domestic architecture at Ulucak around 6300/6200–6000 cal BC comprised one-room rectangular houses with walls constructed either of wattle-and-daub or of mud-

slabs without stone foundations (Cevik). The dwelling structures in the Lakes District were made of mud brick, and had ovens and areas identified as open space/courtyards, as manifested at Hacilar (Mellaart 1970: 24). The quadrangular, fully equipped houses with the customary platforms, ovens, and prepared floors covered with wooden planks are also reported from the settlement at Barcın and Mentese (Roodenberg et al. 2003; Gerritsen, Özbal, and Thissen 2013: figs. 6 and 7). They have well-defined open spaces/courtyards placed in front of the buildings for collective use (Karul). Free-standing, single-room wattle and daub houses within a quadrangular plan, with internal ovens, storage bins, and working places were also developed at the western Anatolian sites (Çilingiroğlu, Çevik, and Çilingiroğlu 2012: figs. 25–26). Quadrangular buildings with a stone foundation were also found at Uğurlu off the Aegean coast of northwestern Anatolia (Erdoğan 2013: 5–7).

The new form of house construction also resulted in remarkable changes in the settlement layout, particularly evident towards the end of the seventh millennium cal BC. It is characterized by adjacently placed buildings with well organized courtyards in front. Buildings arranged around large spaces or courtyards are known from the Lakes District (Derin 2012; Sağlamtimur 2012: fig. 2; E. Özdoğan 2015: 48). Similar spatial arrangements are reported from northwestern Anatolia, where settlements were transformed into well-organized villages constructed within a circular plaza serving as public areas, for example at Ilıpınar and Aktopraklık (E. Özdoğan 2015: 50). The new developments included enclosure walls, as seen in the Lakes District settlements at Kuruçay and Hacilar as well as in Ege Gübre and Yesilova in western Anatolia. The ultimate consequence of this process was the differentiation in domestic and nondomestic architecture. This is particularly discernible in the Lakes District where ceremonial-purpose structures emerged at Höyücek (Duru and Umurtak 2005).

Pottery in the second half of the seventh millennium BC became widespread and the diversity of forms increased exponentially. This is attributed to the increasingly different functions the pots played in daily life, such as cooking, carrying, and storage (E. Özdoğan 2015: 35–38). Some vessels served ceremonial purposes, as exemplified by the animal-shaped vessels and cross-shaped bases from Höyücek and Hacilar (Mellaart 1970: pl. 57; Duru and Umurtak 2005: pls. 60, 61).

Across Upper Mesopotamia, a broad range of decorative techniques and styles were initially employed from the pre-Halaf period onwards. They ultimately resulted in the elaborated painted pottery style known to archaeologists as the Halaf ceramic tradition (Nieuwenhuyse 2007, 2013). The process has been labeled by Nieuwenhuyse (2009) as the “painted pottery revolution.” Painted serving vessels were adopted for the expression of social identities and became important agents in symbolically charged commensality events. By facilitating

new opportunities for symbolic messaging and social networking, advanced possibilities for storing stuff in bulk, and innovative ways for preparing food and drink, pottery containers were an important factor contributing to the success of the Late Neolithic way of life (Nieuwenhuyse and Akkermans). Painted decoration became a main characteristic of the pottery in the Lakes District but was not adopted in central and northwestern Anatolia.

The lithics technology also underwent significant changes in the Late Neolithic. This is best exemplified in central Anatolia. While the Konya Plain, in particular Çatalhöyük, was dominated by pressure-blade assemblages, the eastern part of central Anatolia became dominated by the flake and percussion blade industries, best attested by assemblages from Köşk Höyük and Tepecik-Çiftlik. Similarly, a significant number of large spearheads from that region were made of flint, which was not the material used for projectile manufacture at Çatalhöyük. This may imply the continuous importance of hunting in the region (see Özdöl Kutlu et al. 2015). At the same time, the Lakes District assemblages contained a number of large, distinctive scrapers that also appear in the Konya Plain (Baykal-Seeher 1994).

The Aftermath of the Late Neolithic Transition

One of the major consequences of the Late Neolithic transition was increased mobility and rapid dispersal of Neolithic groups from the relatively restricted areas inhabited in the preceding period, resulting in a steady spread of sedentary settlement. This has been captured accurately by Akkermans (1993) in the phrase “villages in the steppe.” This process is clearly discernible around the Mediterranean and in Anatolia, as manifested by the instant increase in the number of settlements (M. Özdoğan 2011; Düring 2013). The first sites in the Lakes District, western, and northwestern Anatolia appeared before 6500 cal BC and in the following centuries the development of these communities accelerated (see E. Özdoğan 2015; Vandam). A number of sites in northwestern Anatolia increased significantly in the third quarter of the seventh millennium cal BC (M. Özdoğan 1999; Karul 2011). In the second half of the seventh millennium BC onwards, settlement became widespread in Greece (Perlès 2001: fig. 6.4) and at the end of the millennium, settlements emerged across a wide area spreading beyond Greece to the west of the Balkans (Krauß 2008).

An ultimate consequence of these processes was the exploitation of a wide range of new ecological niches. These triggered new forms of interaction with the environment, the character of social relations, routines of daily life, modes of subsistence, as well as social and ritual practices. One of the most dramatic developments happened in the southern Levant in relation to the influx of herding and farming communities to the desert regions of southern Syria and the panhandle

of Jordan in the so-called “Black Desert” of the basalt fields knowns as the *harrat*. This transition involved dislocation from a stable sedentary situation to one of impermanent settlement, moving from location to location on a seasonal basis (Rollefson). Of similar significance was the spread of settlements into the steppe (e.g., Akkermans 1993; Akkermans et al. 2006; Nieuwenhuyse et al. 2016). An Halaf “people” practiced continuous demographic spread of small communities as a result of never-ending splitting of these communities. The newly occupied sites were mostly small to very small, reaching one hectare at the most (Nieuwenhuyse and Akkermans).

This process is also clearly recognizable in the eastern part of central Anatolia. Around 6000 cal BC a number of settlements of different kind appeared in completely new areas while the previously occupied locations were abandoned. These include in particular the settlements at Köşk Höyük, Tepecik-Ciftlik, and Pınarbaşı-Bor. They had subsistence economies based on farming (Todd 1980: 118), but were also placed in strategic locations. Inhabitants of Köşk Höyük and Tepecik-Ciftlik focused on the exploitation Cappadocian obsidian (e.g., Bıçakçı, Godon, and Çakan 2012; Öztan 2012) while groups from Ilıcıpınar, located to the southwest of the Salt Lake, most likely exchanged salt for obsidian. The third quarter of the seventh millennium cal BC marks the inhabitation of different ecological zones in western Anatolia, such as the Latmos region located in the hinterland of Miletos in western Anatolia (Peschlow-Bindokat and Gerber 2012).

The Late Neolithic transition also brought about the creation of bridges and the formation connectivities and interregional links. This is particularly evident between central Anatolia and the newly occupied western and northwestern regions. The Gelveri ceramic style of Cappadocia (Schoop 2005) found at Çatalhöyük West was more likely an import than a local variant. Supraregional developments are also indicated in the trend towards decreasing lithic on-site production and the increased importance of storage and pottery (Rosenstock et al.). A direct resemblance of the burial mural art from Çatalhöyük East to the later distinct relief-decorated pottery of Tepecik-Çiftlik and Köşk Höyük (Bıçakçı, Godon, and Çakan 2012: 104; cf. Düring 2011: 154) implies a bi-directional flow of influences between Cappadocia and the Konya Basin. Similarities in pottery production and burial practices between Çatalhöyük East and northwestern and western Anatolia (Marciniak 2018a, 2018b) imply close interregional links. Some elements of the classic Çatalhöyük tradition at northwestern Anatolian sites appear already in the third quarter of the seventh millennium cal BC. These comprise ceremonial consumption of cattle and deer, sporadic burials beneath the house floors, and burials with grave goods (Özbal and Gerritsen; Karul). The “Fikirtepe Culture” in the Marmara Region appears to have had a greater influx along an eastern, inland route, in particular with the central Anatolian plateau and the Lakes District. Uğurlu on the island of Gökçeada is characterized by

striking evidence of long-distance communications, including seafaring, as indicated by the presence of Melian and central Anatolian obsidian, Balkan honey-flint and marble, as well as nephrite from outcrops at the foot of Ganos Mountain in the Gelibolu Peninsula for the production of ground-stone axes (Erdoğu). Similarly, sites like Hoca Çeşme and Aşağı Pınar in Turkish Thrace (Erdoğu 2013; M. Özdoğan 2013, 2014) show cultural affinities with sites along the Aegean coast of Turkey and the Balkans (Özbal and Gerritsen).

Final Remarks

The volume offers a comprehensive overview of a wide range of processes taking place across different parts of the Near East in the second half of the seventh millennium BC. It examines the diverse ways in which the inhabitants of the region transformed the Neolithic into a qualitatively different phenomenon. A reading of the contributions in this volume together make it clear that the Late Neolithic transition took place locally and largely independently, but the process was enhanced by emerging connectivities and interregional links. At the same time, this transition remained strikingly similar across the region and arguably was guided by some kind of logic. As with the Early Neolithic transition, this process did not take place simultaneously in different parts of the Near East, but instead was repeated over and over again in a number of different zones. A dearth of in-depth comparative studies (but see notable exceptions, e.g., Bar-Yosef 2011; Vigne 2011) makes it difficult to grasp the precise nature of this logic. This volume offers the first comprehensive overview of the transformative character of changes taking place in the first half of the seventh millennium in the Near East within a necessarily broad comparative perspective. Furthermore, it addresses the road these development paved for the spread of the Neolithic outside its core area and its influx into previously uninhabited zones.

Social organization with task-focused groups inhabiting individual houses played a dominant role in the process. This involved the formation of nuclear households with an increasing degree of autonomy in terms of the regimes of acquisition, production, consumption, and reproduction of different resources. Each of them had a well-defined space comprising the house and its immediate surroundings. The shift from communal organization to individual households is evident across different parts of the region, from the southern Levant through northern Mesopotamia, and central Anatolia through western and northwestern Anatolia. As a result, Late Neolithic society was made of smaller, more dynamic, flexible entities that were in position to exploit a wide range of environments. This kind of social arrangement led ultimately to differentiation among contemporaneous units and some form of inequality among their inhabitants. Houses

became more dependent on their own production and the relationships with their counterparts were based on the exchange of labor and goods.

Social and ideological changes taking place at the end of Neolithic and the beginning of Chalcolithic not only contributed to the disintegration of constitutive principles binding larger social groupings of the preceding period and initiated the development of a new social system, but more importantly contributed to the development of fully fledged farming communities in the Near East and beyond. The developments constituting the Late Neolithic transition created conditions for strengthening and consolidating local groups and provided prerequisite foundations for their spread across vast areas, making the Neolithic a truly global phenomenon. The potential of these fundamental changes emerged at the beginning of the Neolithic but were fully manifested and realized only after a few millennia of uninterrupted development in the earliest and the most important centers of the Neolithic culture in the Near East.

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The “8200 cal BP Cold Event” in the Levant

OFER BAR-YOSEF

Abstract: The climate of the eastern Mediterranean was and is characterized by rainy winters and dry summers. Changes in the basic pattern such as variability in yearly or monthly amounts of winter rains as well as their geographic distribution led to shifts in the predictability of animal and vegetal food resources during the Pleistocene. Under these conditions, Paleolithic foragers succeeded by shifting their territories according to the optimal conditions. Cultural changes or population replacements occurred due to competition and conflicts among local foragers and others who invaded the region. With the emergence and establishment of agro-pastoral societies at the onset of the Holocene, known as the Neolithic Revolution, all this changed. Minor but frequent annual climatic fluctuations had a major impact on domestic subsistence, sometimes causing social turmoil on a regional scale. The “8200 cal BP cold event,” a term coined by palaeoclimatic researchers on the basis of various research, is seen as the reason for the collapse of a suite of archaeological cultures that successfully persisted and developed during the Pre-Pottery Neolithic B period (PPNB). In spite of evidence for a few local cultural continuities, the results of this abrupt event affected the course of technical, economic, and cultural developments during the ensuing millennia across the Fertile Crescent and the Nile Valley. That larger populations were able to survive several harsh decades, it is argued here, is because of their social organization, whereby only complex social organizations such as chiefdoms will create the adequate buffer to survive natural calamities.

Keywords: Levant, Pre-Pottery Neolithic, climate change, abandonment, resilience, 8200 cal BP cold event

The Neolithic Revolution and Abrupt Climatic Changes

Paleolithic societies were not impacted by macro- and micro-scale climatic changes as Holocene farmers. The degree of resilience among Paleolithic foragers depended on the “cultural filter” of each group, clan, or tribe. The role of individual hunter-gatherers resulting in poor or good decisions by temporary leaders, determined the fate of their own people. Natural selection had the final verdict, but the cumulative and final evolutionary success of Paleolithic societies is archaeologically and biologically recorded across Eurasia and Africa (e.g., Gamble 1999; Dennell 2009). When faced with a resource crisis, foragers could

relocate to another area, assuming they did not need to compete with others. Long-distance movements were possible because the continents were still relatively empty.

Options for successful survival by migrations changed during the Terminal Pleistocene, in particular in the Levant, a region that stretches from the Taurus-Zagros arc to the tip of the Sinai peninsula. In the southern Levant, population increase, or what is often referred to as “relative demographic pressures,” resulted in partial or full sedentism of forager societies, as known for the Natufian (ca. 15–11.7 ka cal BP). Territorial ownership resulted from social pressures first caused by the Heinrich 1 cold event in the Levant, although its exact dates in the region are not well established (Torfstein et al. 2013). The terminal Pleistocene in the northern Levant is so far poorly studied. The emergence of settlements of large sedentary communities of hunter-gatherers, which spread along the Tigris River Valley during the first millennium of the Holocene, was probably connected to the impact of contemporary farming communities along the Euphrates River and its tributaries (Bar-Yosef 2014b). Only additional excavations of the earliest layers in these mounds will determine whether their origins date to earlier times as suggested in Körtik Tepe (Coşkun et al. 2012).

Whether worsening or variable environmental conditions during the Younger Dryas led to the onset of cultivation and the emergence of large early Neolithic villages in the Levant is still debated. But the abandonment of most Natufian sites that represent sedentary communities of foragers who exploited cereals and other plants is an established observation. The Neolithic Revolution was therefore heralded by a combination of socioeconomic markers, including houses constructed with bricks or adobe on stone foundations; permanent domestic and public storage facilities; and new types of arrowheads, axes, adzes, sickles, and grinding stones. Their economic basis was the cultivation of wild cereals, similar to the short-term experimental cultivation evidenced at Ohalo II some 23,000 years ago (Snir et al. 2015) that later became domesticated. Hunting and gathering continued and the first trials of animal domestication took place by the end of this millennium (Vigne 2008; Vigne et al. 2011). All major villages enjoyed the commodities of long-distance exchanges in, for example, obsidian, chlorite bowls, and Red Sea shells.

The consumption of carbohydrates from the onset of the Holocene and in the course of several millennia was responsible for population increase (Bocquet-Appel 2011a, 2011b and references therein). However, when winter precipitation became infrequent or irregular, farming communities were vulnerable to repeated droughts and poor grain harvests. Five successive years of decreased amounts of winter rains in the marginal areas of their normal distribution became detrimental and may have forced people to leave the village due to the lack of food supplies channeled by a central authority. Ceremonial aggregation sites

were constructed in order to build and strengthen social cohesion, but social organization was not sufficiently hierarchical and efficient to serve as a buffering mechanism in bad years. Domesticated cereal species became available only by the end of the first millennium and a half of the Holocene and the addition of tended and domesticated goat, sheep, cattle, and pigs, together with continued hunting and gathering, provided a sound economic base. The successful social entities across the Levant (i.e., tribes), endured over the next two millennia, but faced a harsher event known as the “8200 cal BP cold event.”

Understanding the assumed social upheaval caused by this abrupt climatic change requires the following information: (1) description of the societies affected by the climatic event; (2) proxy paleoclimatic evidence that indicates the occurrence of an abrupt crisis over a large or small geographic region, and (3) secured archaeological records that demonstrate that the observed occupational gap was caused by a climatic crisis.

Village abandonment is a poorly studied subject in archaeology. Often it is explained as the result of successive raids, or as due to epidemics, soil salinization, or drought. Reoccupation after a century or more is a phenomenon observed in a fair number of cases. Similar cultural markers recorded before and after the crisis may indicate the return of the same people, but discernible differences reflect occupation by a new group. The observation of similarity or differences, however, depends on the evaluation of archaeologists who may use different measures for identifying peoples known only through the material record.

There is a wealth of literature that deals with disasters of all kinds—earthquakes, volcanic eruptions, tsunamis, local wars, and more. However, I assume that the main impact of the 8200 cal BP cold event, which is not necessarily an exact historical date, was due to a series of droughts and their various outcomes. Indirectly, site abandonment following the crisis hints at the effects of inequality and subordination in societies that failed to cope with challenges. Their vulnerability was determined by their capacity to anticipate common disasters in a region that enjoys winter precipitation and generally dry summers. Therefore, the degree of resilience of farming societies relied on their recognition that, in spite of a past characterized by good harvests and full storage facilities, they needed to be able to cope with repeated bad harvests and depleted storage that result in famine, as malnutrition leads in many cases to loss of natural immunization to various sicknesses and increased mortality.

Calamities are generally first seen on a local level, be it a village or a small territory. The impact on the local population triggers a “domino effect” and other areas become unwillingly involved. In the following, I mainly aim to address these issues within the context of the Levantine Neolithic. In order to describe the impact of the 8200 cal BP cold event in this region I begin with a description of the main socioeconomic characteristics of the Levantine PPNB, the proposed

demographic reconstructions and social organizations, followed by the proxies of this climatic event. Detailed discussion of the case of Sabi Abyad (Syria) is presented, leading to the final conclusions of the cultural impacts of the 8.2 cal BP event. In addition I discuss the issues involved in dating site abandonment, which is directly relevant to the issue of what happened to the people who lived there before.

Levantine Neolithic Archaeological Records

The establishment of permanent villages during the first millennium of the Holocene, the Pre-Pottery Neolithic A period (PPNA), brought dramatic cultural and economic changes to the Natufian foraging societies. This was also the first major step in the formation of the Anthropocene landscapes. A century after V. Gordon Childe coined the term, whether the Neolithic Revolution is viewed as a gradual process depends on the personal view of individual scholars. A recent example may clarify my own opinion: Viewing the “computer and digital age” as the culmination of the technological and social processes that began about four centuries before the full expression of the Industrial Revolution in the nineteenth century, results in a time frame of about twenty generations or five hundred years. This period is short compared to the Neolithic Revolution, which took perhaps some four millennia to complete, and both are of very minimal duration compared with most of the dated technological transitions in the course of 3.3 Ma of human evolution.

The majority of the evidence and the varying interpretations regarding the early Neolithic in the Levant can be found in numerous publications, several of which are referenced in this paper. The onset of the cultural change, as mentioned above, is expressed in the technical improvements of domestic and public structures. Buildings constructed during the Pre-Pottery Neolithic A required more energy expenditure than the brush huts built on stone foundations by the Natufians or other contemporary foraging groups. Early cultivators constructed houses on stone foundations dug into the ground, with walls erected with wattle and daub, plano-convex bricks made of rocks (e.g., Jerf el Ahmar) or clay (e.g., Jericho, Netiv Hagdud), and flat roofs (e.g., Stordeur 2015; Goring-Morris and Belfer-Cohen 2008). Digging up clay to be mixed with straw and other ingredients for making the material for the walls or the bricks and felling and shaping trees as poles or roof supporters demanded more skill and time. Neolithic villages required more wood for various purposes than any Natufian site. This activity justified the manufacturing of axes-adzes of various types, which in the northern Levant were made of polished stones and in the south by bifacial flaking finished with transverse removals creating a sharp working edge.

PPNA farming sites were larger than the Natufian hamlets but not larger than the mounds of sedentary hunter-gatherers along the upper Tigris River, which are mostly dated to the first millennium of the Holocene (Bar-Yosef 2014b). Occupied year around, abandoned every few years, and then reoccupied, they were smaller in size than the ensuing PPNB sites and demonstrate a chronological gap of a century or more prior to the onset of the PPNB. This “mini-gap” is thought to be related to a short climatic dry period (Borrell, Junno, and Barcelo 2015).

The PPNB (ca. 10,500/200–8400/200 cal BP) is commonly subdivided into four subperiods, namely, Early, Middle, Late, and Final PPNB (abbreviated as EPPNB, MPPNB, LPPNB, FPPNB). The latest phase, also defined as PPNC (Rollefson, Kafafi, and Simmons 1990), is based on a change from the blade production that dominated during most of the PPNB to flake production in the PPNC. The calibrated radiocarbon chronology of each of these phases is open to certain inconsistencies but it is generally agreed that the longest phase (ca. 900 years) was the MPPNB. Many of the components of the Levantine PPNB are summarized in various writings (e.g., Aurenche and Kozłowski 1999; Cauvin 2000; Stordeur 2000, 2012; Stordeur et al. 2010; Kuijt 2000; Kuijt and Goring-Morris 2002; Akkermans and Schwartz 2003; Kozłowski and Aurenche 2005; Asouti 2006; Simmons 2007; Watkins 2008; Özdoğan 2011a; Goring-Morris and Belfer-Cohen 2011; Belfer-Cohen and Goring-Morris 2011; Willcox and Stordeur 2012; Bar-Yosef 2014a).

In a previous publication I defined this cultural matrix as “the PPNB civilization” (Bar-Yosef 2001), a term that differs from the “PPNB interaction sphere” (Bar-Yosef and Belfer-Cohen 1989), which covers a larger geographic region. I used this term despite the lack of evidence for the presence of writing systems. Others prefer to employ the label of “PPNB *koine*,” a Greek term that designates all the people who spoke the same language or several related dialects. Using this term as a synonym for the “PPNB Interaction sphere” assumes that the recorded connections across sites and geography had a similar connotation, undoubtedly a hypothesis worth testing.

The climatic conditions during the PPNB were characterized by stable winter rainfall that contributed to the success of the agricultural communities, which grew an increasing number of domesticated plants (e.g., Lev-Yadun, Gopher, and Abbo 2000; Tanno and Willcox 2006; Zohary, Hopf, and Weiss 2012). Stable carbon isotope of wheat seeds from Tell Halula, on the banks of a tributary of the Euphrates River, provide ratios that indicate wetter conditions than today (Araus et al. 2001). Despite the success of the PPNB economy, we cannot assume that over more than two millennia no droughts hit the region, whether in its entirety or in part. One suggestion, for example, would date ca. 9,200 cal BP as a mini-crisis (Flohr et al. 2015). However, the 8200 cal BP cold event was the harshest event, lasting one or two centuries, and had major social impacts beyond the Levant.

The basis for the flourishing economy of the PPNB was cultivation of domesticated species of cereals that supplied the main staple food with legumes such as peas, broad beans, and chickpeas (Willcox, Buxo, and Herveux 2009; Zohary, Hopf, and Weiss 2012). Goat, sheep, cattle, and pigs were already domesticated (Vigne 2011, 2015; Zeder 2008, 2011; Arbuckle 2013; Arbuckle et al. 2014). The four domesticated animals were herded from the northern Levant southward and spread through exchange among neighboring communities during the Middle and Late PPNB. Cultivated flax was employed for making linen for ropes and other products while species of wild cereals were used for making baskets (McCorriston 1997; Schick 1989; Stordeur 1989). Wood, roots, and reeds were exploited for making different objects. Gathering continued, as did hunting.

I should note that, before dispersed domesticated species of plants arrived in a certain area, the hunter-gatherers were triggered to cultivate local plants when the population faced food shortages. This kind of adaptation process was suggested with respect to the spread of goats or the notion of their domestication reached the Lebanese mountains and could have been the cause for a secondary center of domestication (Wasse 2001).

A rapid population growth is represented by the size of the villages and their domestic architecture. Buildings exhibit a shift from the round/oval house plan of the various rectangular plans that began to appear in late PPNA (Stordeur 2000, 2015). Subregional variability is exemplified when large, long, rectangular houses such as at Nevalı Çori (Hauptman 1999), “grill plan” houses at Çayönü, and later the multiroom houses at, for example, Bouqras became common (e.g., Özdoğan and Özdoğan 1998; Akkermans et al. 1983). The cultural impact from the north is visible in the architectural sequence of Beidha (southern Jordan) when, during the PPNB, rounded, polygonal buildings were replaced by rectangular plans.

PPNB houses were built above ground with stone foundations, rectangular mud-brick or adobe walls, and flat roofs. In southern Jordan two-story houses were built from stones at Basta, Ghwair, and Ba’ja. A unique type named “corridor houses” exposed at Beidha and ‘Ain Ghazal (Kuijt and Goring-Morris 2002; Simmons 2007; Byrd 2005b). The corridor was formed by a series of parallel well-built cells serving as the basement. The floor above and the walls were constructed from wood, plaster, and adobe. In several villages, living quarters were arranged as compounds of domestic units, as, for example, at Basta (Gebel, Nissen, and Zaid 2006), Beidha (Kirkbride 1966; Byrd 2005a), Ba’ja (see below), and ‘Ain Jamam (Gebel, Nissen, and Zaid 2006), as well as Sha’ar Hagolan (Garfinkel and Ben-Shlomo 2009). The walls of the houses, whether one- or two-story, were attached to each other, with a very narrow space or an alley between them which was often used as dumping zone.

The unanswered questions are: (1) why did people at the time of the Late PPNB build two-story houses, as there are no indications that the potential area

of the village was limited by social rules or a wish to avoid construction on agricultural land?; and (2) how did the movement from one unit to another take place? Did they walk across the roofs as in the famous case of Çatalhöyük? A potential explanation would be that defensive needs expressed in such arrangements reflect increasing levels of conflict within the local clans or between villages, and the fear of raids by outsiders (e.g., Bar-Yosef 2010a, 2010b). In addition, such a dense settlement plan could be interpreted as reflecting symbolic security demands (e.g., Hodder 2006; Roscoe 2009).

Building of houses required supplies of wood obtained by felling trees in the Mediterranean forests, a process that began during the PPNA. Other anthropogenic activities affected the immediate environments of the villages, including clearing fields, digging clay for making mud bricks and wattle and daub, and clearing pastures sometimes by using fire. Another important invention, plaster, first appeared in the Natufian period (Kingery, Vandiver, and Pickett 1988); the process involved collecting limestone fragments, burning them in a kiln, and later pounding them in mortars to make a powder to be mixed with water. Several domestic and most public buildings had plastered floors and some wall coatings (e.g., Jericho, ‘Ain Ghazal, Yiftahel, Beisamoun, Nevali Çori, Çayönü, and others). Plaster was also employed in reshaping skulls removed from burials and molding statues as in ‘Ain Ghazal, Jericho, and the broken piece uncovered in Nahal Hemar cave. In certain areas, such as the El-Kowm basin, gypsum was used for similar purposes.

The increasing site size of PPNB villages is noticed across the Levant but more particularly by the phenomenon entitled “mega-sites” located on the Jordanian plateau and mostly dated to the LPPNB and PPNC (Bienert, Gebel, and Neef 2004 and papers therein). The overall estimated surfaces range from 6 to 15 ha (e.g., Gebel 2006; Simmons 2007), therefore the abandonment of these large villages raises two questions: (1) How did the major villages emerge and what was the nature of their intersite relationships?; and (2) what caused the collapse of a complex socioeconomic system, which is suspected even to represent a chiefdom (Rollefson 2004a, 2004b)?

The spatially distributed PPNB sites that share cultural attributes are seen as resembling the Greek “amphictyony” (Belfer-Cohen and Goring-Morris 2011) or even the earlier Sumerian example of Nippur (for which see Hallo 1960). This term refers to neighboring states that form an association with one another in their common interest. Whether a loosely coordinated regional organization can be referred to by a Greek term or simply be defined as the territory of a Neolithic tribe, is a matter of choice (Bar-Yosef 2001; Barzilai 2010).

Among the PPNB sites there are a few that could be considered as central or unique in their area. These include the outstanding examples of Göbekli Tepe, Kefar HaHoresh, Ba’ja, and Nahal Hemar cave. Göbekli Tepe, on top of a hill

watching over the Balikh River is known for the series of polygonal buildings (the lower layer) constructed with the rock-cut T-shaped limestone pillars, mostly decorated by carving various animals and schematic human features. Quarrying, shaping, and carving these as well as smaller sculptures embedded in the walls, as well as the “windows” required organized labor and steady food supplies, joint operations, once suggested by the excavator as resulting from coercion (Schmidt 1999, 2005, 2012). Somewhere else I proposed (Bar-Yosef 2014a) that the construction of this site and the presence of similar buildings in others within a radius of some 100 km could have been a chiefdom that failed. Clear hints for the presence of central authority during the PPNA were suggested by Stordeur (2015) in her analysis of the village of Jerf el Ahmar.

The lower complex at Göbekli Tepe, which included more than one structure, was filled in and rebuilt with smaller rectangular buildings that mirror the architecture of PPNB sites with smaller T-shaped pillars. Dating the construction of the first sanctuaries is critical for social interpretations, but the current radio-carbon dates provide as yet a somewhat ambiguous chronology (e.g., Dietrich et al. 2013).

Ba’ja is located in a hidden, difficult-to-access, valley in the Petra area. The excavations exposed numerous buildings, often attached to each other, several with two floors. The remote setting of this village and its association with water installations (Gebel 2004; Gebel and Kinzel 2007), as well as a wall painting and some unique small finds, separate it from nearby sites such as Ghwair I in the open valley of Wadi Feynan, where similar buildings, all constructed of stones, were uncovered. This type of building, common in Late PPNB sites in Jordan, was also uncovered in Basta, Ain Jamam and others (Gebel, Nissen, and Zaid 2006).

Kefar HaHoresh is interpreted as a central place for burying the dead and feasting during ceremonies. Graves with multiple burials were covered by plaster floors and the majority encircled by rectangular walls imitating the ground plans of PPNB domestic buildings (Goring-Morris 2005; Goring-Morris and Kolska-Horowitz 2007).

A unique site is the small dark cave of Nahal Hemar, in the Judean desert, used as a storage facility for ritual paraphernalia (Bar-Yosef and Alon 1988). The large number of objects, mostly of PPNB age, including a stone mask, baskets, strings, a linen head cover, wooden arrowheads, painted wooden beads, bone figurines, several human skulls modeled with blackened collagen (first misidentified as asphalt), a collection of bone objects, a large assemblage of Nahal Hemar “knives” (elongated blades with two side-retouched notches near the proximal end), a sickle hafted in an ibex sheath, and more. In sum, Nahal Hemar cave represents a repository of modeled skulls and other objects as well as a storage of objects used during several ritual events thus marking the cave as a special place within the landscape of this period.

In the contexts of domestic rituals selected skulls were often removed a year or two after burial, modeled with plastered and were placed in various types of domestic loci in the occupational deposits. Their relatively small number probably indicates the presence of a local elite. The known plastered skulls were uncovered in Jericho, Ramad, Aswad, Beisamoun, Kefar HaHoresh, ‘Ain Ghazal, Yiftahel, and in Anatolia (e.g., Khalaily et al. 2010; Rollefson, Schmandt-Besserat, and Rose 1999; Schmandt-Besserat 2002; Hershkovitz et al. 1995; Bonogofsky 2005, 2006 and references therein).

Increasing variability across the north–south axis of the Levant can be seen in the domestic toolkits. Axes/adzes in the north, as mentioned above, were made of basalt and limestone by polishing but in the south shaped by bifacial knapping with transverse removals shaping the working edge. Burins, scrapers, awls and borers, sickle blades, and different types of projectile points have been given site or regional names such as Byblos, Amuq, Jericho points and the like (e.g., Gopher 1994; Aurenche and Kozłowski 1999; Kozłowski and Aurenche 2005). Sickles, for harvesting the cereals, were hafted blades used together with V-shaped bone tools for stripping the seed heads from straw, and were later supplemented by the invention of the the threshing board or *tribulum* (Anderson 1998).

The geographic distribution of the typical Levantine arrowheads made on blades were named “Big Arrowheads” and their distribution westward into Anatolia was considered as marking the expansion of agricultural communities (Kozłowski 2001). In addition, certain types had a particular distribution. For example, Jericho points characterize the central area of the Levant. Cultural differences identified by particular knapping techniques are obvious if we compare the Levant to the eastern province. In the foothills of the Zagros, obsidian or pre-heated flint cylindrical cores with a pointed base, known as “bullet cores,” were pressure flaked to obtain bladelets that were often shaped into microliths, thus reflecting another interaction sphere of lithic technology. Obsidian is present in many sites in both areas in different quantities, testifying to an exchange network rather than “down the line” trade (Ortega et al. 2013, and references therein).

Storage facilities were public, built installations, and mini-rooms in houses such as Basta served the same purpose (e.g., Kuijt 2008, 2009). Indeed, there is hardly any unambiguous evidence (except for rare hints in the excavated sites in the Levant) for a shift from nuclear-family consumption to larger social units or institutional control of public granaries (Kuijt and Goring-Morris 2002; Stordeur 2015). This observation supports those who see the social structure as more or less egalitarian. Unfortunately, most excavated areas of Levantine PPNB sites are relatively small (several hundred square meters). It is therefore only a matter of luck, such as occurred in the excavations of a later early Chalcolithic site, Tel Tsaf,

in the Jordan Valley, where a large building (temple? palace?) was exposed, encircled by several large granaries, dated to less than a millennium after the PPNB (Garfinkel, Ben-Shlomo, and Kuperman 2009). Searching in the published maps of PPNB sites for round structures that were not domestic buildings, whether floored or not by plaster, may indicate the presence of public storage. For example, the round structure in 'Ain Ghazal with its plaster floor (Rollefson and Kafafi 1996) could have been a storage facility.

In sum, sites in the northern Levant seem to be richer in precious commodities than those of the southern Levant. The rich stone-bowl assemblage recovered in Bouqras, is a good example for the ability to purchase or produce locally thin-walled bowls made of calcite, marble, alabaster, and hard rocks (Roodenberg 1986). It could have been a continued regional tradition practiced by hunter-gatherers living in sedentary sites (now tells) such as Körtik Tepe in the Upper Tigris steppe (Kozłowski and Aurenche 2005; Bar-Yosef 2014b and references therein).

The technological advancements in the northern Levant are also expressed by the production of experimental small clay recipients that appeared during the Early and Middle PPNB in various sites, and by the Late PPNB, larger common-size pots for storage and cooking made in the area between the Amuq and the Khabor Valleys (see, e.g., Akkermans and Schwartz 2003). In this area Tell Seker-al-Aheimar produced a series of radiocarbon dates of the "Pre-Proto-Hassuna" levels of ca. 8600 cal BP. As the pottery seems to resemble the Dark-Faced Burnished Ware known from the Amuq it was labeled as Dark Ware (Nishiaki and Le Mièrè 2005). Several of these recipients were modeled from lime and ashes (like the plaster employed for PPNB floors), and are known as "White Ware" (e.g., Garfinkel 1999). Most of the evolution of clay pots occurred during the following centuries, after the 8200 cal BP cold event as indicated by the dates from Kashkashok and Thalatat in the same valley (Akkermans and Schwartz 2003).

Cyprus became an integral part of the Levant from the moment it was first colonized during the PPNA (see, e.g., Vigne et al. 2012). Connection by seafaring, apparently from the Anatolian coast some 35 nautical miles away, continued during PPNB times, mainly from ca. 10,200 cal BP. Wild goat, sheep, cattle, and pigs were transported together with fallow deer and dogs to Shillourokambos (Vigne 2008; Vigne et al. 2013; Vigne and Cucchi 2005). Later, fox and cat were brought in as well.

Understanding the "PPNB interaction sphere" requires the recognition that the population inhabiting areas east and south of the "sown land" were hunter-gatherers. Interactions between farming communities and foragers in this semi-arid belt evolved since the time of the PPNA. However, most reported sites date to the PPNB (Bar-Yosef 1984, 2001; Garrard, Betts et al. 1988; Garrard, Baird

et al. 1994). Mutualistic interactions between the two societies could have been in constant flux. The relations could be either amicable, including exchange of grains for precious stones or finished products, or even for hunted game and hides. These intricate relationships, still poorly understood, may have led to intermarriage, perhaps with forager women marrying into farming communities; as suggested by ethnographic records, or they may have been hostile, leading to acts of violence and fighting.

PPNB mobile foragers' sites are generally up to 1,000 m² indicating the camping of a small band. Animal bones, some plant remains, and large collections of grinding slabs testify to a mixed subsistence based on hunting and gathering. Bone tools and large collections of marine shells and beads document the use of body decorations and the making of elements for long-range exchange. Site locations, in distinct topographic features such as mountains, hills, or open plains, reflect past seasonality. For example, employing an environmentally determined distribution of the annual site pattern among historical and recent Bedouin camps in southern Sinai allows for certain observations. Locations in well protected narrow wadis were suitable as winter camps, and those of open exposures in valleys were probably summer occupations. Similar information was obtained in a series of excavations in Jordan, where oases facilitated the presence of larger sites (e.g., Garrard, Betts et al. 1988; Wright and Garrard 2003). Winter camps had very few burials and summer camps had constructed storage pits and secondary burials (Gopher 1994; Dayan et al. 1986; HersHKovitz, Bar-Yosef, and Arensburg 1994). The large collections of marine shells were mostly shaped to serve as items of jewelry and elements of barter and exchange (Bar-Yosef Mayer 1997). In one case in Jordan, the camp of rounded dwellings of the locals was joined by a square one, possibly erected by a "foreigner" (Garrard et al. 1994) that could be a mobile artisan or a traveling merchant that came from a village society.

The "desert kites," special traps created by two converging lines of stones leading to a final enclosure that served as a killing area, were probably first laid out during the PPNB in order to hunt gazelles or onagers (Betts 1998). Employing this technique, which is also known from other locations in the world, must mean that there was a demand for meat, hides, and horns. Similar structures were used until historical times in various regions of the world.

In sum, the data summarized above allow us to recognize the main social entities across the Levant, and thus to explain why the 8200 cal BP cold event had such a major impact on the settlements and their populations. The growth of the Levantine PPNB entities (or civilization) over 2,200 to 2,400 years was due to a successful agro-pastoral economy. Several of the archaeological markers employed here in identifying different Neolithic tribes have been discussed elsewhere (Bar-Yosef 2001; Bar-Yosef and Bar-Yosef Mayer 2002).

Proxies of the 8200 cal BP Cold Event and Their Recognition in Archaeological Contexts

The 8,200 cal BP cold event was first identified by in the Greenland ice core and the combination of the Dye3/GRIP/GISP and NGRIP that indicated an age range of $8247-8025 \pm 50$ years (Alley et al. 1997 and see for the rest of the information references in Rohling et al. 2002; Rohling and Pälike 2005; van der Plicht et al. 2011; Flohr et al. 2015). Additional work on the three Greenland ice cores demonstrated that the beginning of the event was gradual at ca. 8,300 cal BP but its end was rather abrupt. However, other sources including speleothems in various countries as well as the sequences of the German oaks and Austrian Alpine trees, indicate ranges of about 200 ± 50 years (van der Plicht et al. 2011).

The event is identified in the marine cores of the eastern Mediterranean (including the Aegean Sea) supported by the entire suite of terrestrial observations. In the southern Levant the 8200 cal BP event is clearly expressed in the terrestrial and marine sediments of the Dead Sea. Observations by Migowski et al. (2006, 425) are that

at 8.2 cal kyr BP a gypsum-sandy layer was deposited at Ze'elim marking shallow water conditions, and pointing to lake level at 416 m bmsl. The hiatus is bound by a layer of pebbles and gypsum–aragonite at the bottom of the Ein Feshkha core (at depth of 430 m bmsl). This layer, dated to 7.8 cal BP, resembles shoreline deposits in the exposed Ze'elim sections, and was thus identified as a shoreline marker. The evidence from the three cores combined suggests a rapid drop of lake level at 8.1 cal kyr BP from above 412 to below 430 m bmsl, and rising of the lake above 430 m bmsl ca. 300 yr later.

Supportive evidence is the pollen core from the Dead Sea (Litt et al. 2012) that reports a hiatus marked by lack of deposition at ca. 8,000 cal BP. Similarly, the interpretation of these authors suggests a considerable reduction of rainfall over the drainage basin of this lake at that time.

On the basis of the regionally available evidence that unfortunately was not analyzed in the comprehensive review by Alley and Ágústsdóttir (2005), we need to examine the information gathered at Tell Sabi Abyad in the Khabur Valley, undoubtedly the best-dated site in the Levant. A short occupational gap is evidenced on the basis of stratigraphic observations of a sequence of 145 radiocarbon dates around 6200 BC ($\approx$ 8,200 cal BP). According to van der Plicht et al. (2011) as well as the recent comprehensive review by van der Horn et al. (2015) the stratigraphic break is correlated with cultural changes clearly expressed after the desertion of the site and its reoccupation (Akkermans 2010; van der Plicht et al. 2011).

The list of changes demonstrate major differences as follows (van der Horn et al. 2015 and references therein):

- (1) Two new types of buildings named “warehouses” are large, rectangular buildings with many small rooms, and the small, round structure known as “tholoi” that appeared ephemerally earlier (ca. 8500–8200 cal BP) were built in abundance on site (Akkermans 2010).
- (2) The presence of seals and sealings in the new village are interpreted as an increase in social stratification. This change is interpreted as marking an increase in the role of herding and the formation of wealth.
- (3) Mortuary practices are often interpreted as reflecting the social structure. The significant changes that took place after the 8.2 event changes were no secondary burial or intramurals, decline in animal as grave offerings.
- (4) Subsistence changes already began around 8,300 cal BP when cattle exploitation was reduced and pigs disappeared. Combined with steeply increased goat and sheep herding, this suggests a drying trend in the climate. This observation is directly supported by the growing of barley, a cereal better suited for dryer climates.
- (5) Technical changes in feeding marked by increased use of milk (which had begun earlier) and higher frequencies of spindles, employed in making textiles from animal fibres, is a point that supports the notion that the new population was based on the descendant of their cultural predecessors.

Whether the culture of the new village was established by the decedents of same population that abandoned the mound for a generation or two is unknown. The assumption of familial continuity requires the genetic evidence. The acceptance of reoccupation by people bearing similar cultural attributes is a feasible explanation accepting the interpretation that the site was abandoned due to consecutive droughts and lack of support by a central authority. The new inhabitants were people who expanded from the north-western zone, closer to the Mediterranean and the Taurus, who were familiar with the region and practiced the adequate subsistence strategy to survive in this semi-arid area.

I accept the time correlation between the 8200 cal BP event and the cultural change, but relate it to the resilience of the local population, although there is no direct evidence that they stayed put. They conclude with the statement that “one reconstructs causality with regard to the effects of climate change...our observations refute the deterministic “collapse of cultures” stance with which the archaeological record is currently replete. Prehistoric societies in the Near East were apparently able to adapt to variations in weather and climate. To the Late Neolithic inhabitants of Tell Sabi Abyad, drought represented a challenge that required the implementation of developed coping strategies” (van der Plicht et al. 2011: 297). The updated review (van der Horn et al. 2015) suggests to search the

aridification process in human behavior such as over grazing, an old hypothesis that assumes non-intelligent behavior by shepherds and a bias caused by the imposition of modern political boundaries such as in the case of the Sahel droughts of the 1980s. Moreover, it proposes to examine other human cultural activities as a domain for further explanations. Similar conclusions rejecting the impact of the 8200 cal BP cold event were raised in a recent reevaluation of the comprehensive radiocarbon data sets from the Levant, Anatolia and the Zagros area (Flohr et al. 2015). Needless to mention that Sabi Abyad is a unique case as most Neolithic sites in the Levant did not produce the large number of ^{14}C readings as this site, and lack of control of the exact time where sites were abandoned and reoccupied makes one doubt the conclusions.

Among the obvious limitations for reaching sound conclusions is that in many sites the dates before abandonment are not necessarily from the year or generation when it occurred. In most cases the last year(s) of an abandoned site were affected by postdepositional processes including diagenesis or erosion and the available radiocarbon readings originate in a phase several generations before desertion. Sites like Jericho, Basta, 'Ain Ghazal, Beisamoun were reoccupied, but not in all cases the ^{14}C dates for the earliest new occupations are available. It seems that there were sites abandoned during the PPNB before the 8.2 Ka cal BP event. Therefore the generalization that "prehistoric societies in the Near East were apparently able to adapt to variations in weather and climate" by van der Plicht et al. (2011) is probably correct in the same sense as the above reference to Paleolithic foragers that "the cumulative and final evolutionary success of Paleolithic societies is archaeologically and biologically recorded across Eurasia and Africa."

In addition, various scholars are right in stating that length of time of the crisis of the 8200 cal BP cold event as recorded by paleoclimatic evidence is still poorly known (e.g., van der Plicht et al. 2011). The interpretation of this observation in archaeological terms could be that the decrease in precipitation and its monthly distribution that determines the success of cereals' harvests, began earlier in the east and later in the west. Probably the current evidence concerning the impacts of droughts, for example in Syria, on farmers within the range of annual average of 250 mm a year, is a lesson for us when we try to interpret the past.

Starting in 2006 ... and lasting into 2011, Syria experienced a multiseason, multiyear period of extreme drought that contributed to agricultural failures, economic dislocations, and population displacement. This dry period has continued and is now being described as the "worst long-term drought and most severe set of crop failures since agricultural civilizations began in the Fertile Crescent many millennia ago (Gary Nabhan, as cited by Femia and Werrell [2012])." (Gleick 2014, 322)

A similar statement is offered by other scholars:

Before the Syrian uprising that began in 2011, the greater Fertile Crescent experienced the most severe drought in the instrumental record. For Syria, a country marked by poor governance and unsustainable agricultural and environmental policies, the drought had a catalytic effect, contributing to political unrest (Kelley et al. 2015: 3241).

The important role of a central authority was important in the past, as historical evidence from some one thousand years ago of what happened in this part of Western Asia demonstrates (Ellenblum 2012).

The dominance of the planetary Saharan desert pattern in the southern Levant (Sinai peninsula) is wider and narrows towards the region where both the Euphrates and the Tigris flow. A length of two to three hundred years could be expected in the south and one hundred years or less in the northern Levant (given the best available radiocarbon dates). A good number of large sites, such as the Jordanian “mega-sites,” were not tested on a reasonably large scale, and their collapse could be due to various reasons. Sites in the Jordan Valley, such as Sha’ar Hagolan, were deserted and never reoccupied. The site is located on the bank of the Yarmouk River and was originally established as a PPNC settlement that lasted from ca. 8,900/600 cal BP through ca. 8,400 cal BP. The Yarmukian village was a large, well-organized village of the Pottery Neolithic period, which lasted until ca. 8,000 cal BP (Garfinkel and Ben-Shlomo 2009, fig. 1.19). Jericho had a clear stratigraphic break between the PPNA and PPNB and the nature of the Pottery Neolithic occupations was rather poor when compared to earlier times. This climatic crisis is reflected in the Dead Sea records mentioned above.

Along the river valleys of the northern Levant, villages sustained themselves more easily through this climatic crisis. However, a good example is Mezra’a Tleilat on the bank of the Euphrates River. The PPN layers (Phases III and below) are covered by the early Pottery Neolithic remains (Phase IIB of “Proto Hassuna”) and after ca. 8200 cal BP by Phase IIA, characterized by flimsy remains that are assigned to “Proto Halaf” (Özdoğan 2011b).

Today, it is obvious that there are several gaps within the Neolithic sequence of the Levant. Therefore, similar to research conducted in Sabi Abyad, in Mezra’a Tleilat, or between the western and eastern mounds of Çatalhöyük, studies in the southern Levant stress differences between the Yarmukian and later entities such as the Lodian, Wadi Rabah, and others (e.g., Gopher 2012: ch. 41). However, for the discussion on possible climatic impacts it is necessary to discuss explicitly whether there is sufficient evidence for cultural continuity.

Conclusions

The abrupt adverse climatic change around 8,400/8,300 through 8,200/8,000 cal BP was most likely the explanation for abandonment of many sites across the Le-

vant and in Anatolia. Tribal societies subsisting on farming and herding in which the demands of better-off individuals (or families) drove the flow of prestige goods, could not continue to survive when hit by a consecutive series of droughts. Digging wells, a technology known from Shillourokambos, Mylouthkia, Atlit-Yam, and Sha'ar Hagolan, could only solve the problem of drinking water for humans and herds when the water table was not too deep for the available techniques.

Human reactions across the Levant were probably variable. The exhausted grain storage in villages impacted by the droughts resulted in gradual malnutrition, a background for the onset of disease. Low hygienic conditions and the presence of animals created the right environment for the development of parasites resulting in sickness affecting the most vulnerable members of the society: pregnant females and children. Recent research at Neolithic sites in Europe have uncovered the potential for this avenue (Le Bailly et al. 2007). Abrupt climatic changes are hazards that also serve as triggers for variable impacts within the social arena, not only migrations. What determines the outcome in every individual case or on a regional scale is the degree of resilience of individuals, groups, and their social organization when facing the natural calamity.

I choose to end the discussion by citing Elizabeth Colson's observations of the behavior of the Tonga people, an agro-pastoral tribe in Zambia as an illustration (Colson 1979: 25):

Among the Tonga one can tell by the sound of the village whether it is a good year with an abundant harvest, or a poor one when grain must be conserved. When grain is plentiful, women stamp grain in large wooden mortars and the thump, thump, thump of the stamping pole resounds through the village from morning to night.... When grain begins to be scarce women turn to the grindstone, which grinds husk and grain and so produces the maximum bulk, but a coarser product. When times become still worse, the grindstone is moved indoors as all other food preparation.... With this also comes a reduction in the number of meals."

Colson continues to describe how households that belong to the same homestead that generally share food preparations retreats to their nuclear families, and the men who never eat with their women and children, share family meals inside the house. One can speculate, based on many cases, what happens when real hunger takes place, and the need to search for food becomes imperative. Village abandonment, possibly engraved by the spread of disease due to malnutrition, is one of the known outcomes from the literature of relief organizations. In addition we can mention fights, raids, and migrations as caused by food shortages and political unrest. In sum, farmers-herders, lacking the support of a central authority, are vulnerable to impacts of decadal persistence of droughts. We may conclude by taking into account the past climatic conditions of the Levant and offer an

interpretation as based on the evidence from the Dead Sea that demonstrates the effects of a short-term climatic event. Although our archaeological knowledge is limited, and a good number of Neolithic sites were possibly abandoned before the 8.2 cal BP event, this should not deter us from reaching the above conclusions, which will be tested in the future.

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Tumultuous Times in the Eighth and Seventh Millennia BC in the Southern Levant

GARY ROLLEFSON

Abstract: The southern Levant witnessed two stunning disruptions in the more than five-thousand-year development of the Neolithic period. In the middle of the eighth millennium, populations in the areas west of the Jordan Valley suffered a major dislocation, with a massive migration to the Jordanian highlands. This transfer of people resulted in the establishment of megasites, such as 'Ain Ghazal and Basta, whose populations ranged up to 3,000–4,000 people or more. By the end of eighth millennium, the megasites underwent a catastrophic collapse with considerable depopulation or outright abandonment altogether. This latter turmoil contributed to a major population movement into the eastern badia in Jordan's Black Desert which sustained itself with an intensification of caprine pastoralism and hunting in a landscape considerably friendlier than what exists there today.

Keywords: megasites, Late Neolithic, pastoralism, migration, badia, Jordan

With the exception of the Younger Dryas (significant in terms of its relationship to the unfolding of the Neolithic Revolution), the post-Pleistocene southern Levant enjoyed an almost unbroken evolution of social complexity that permitted semisedentary and sedentary settlement from the fourteenth through eighth millennia BC (Bar-Yosef 1998; Stordeur et al. 2000; Finlayson et al. 2011; Rollefson 2015) supported by an increasingly productive landscape of climatic improvement (Bar-Matthews et al. 1999: 91; Rambeau et al. 2011: 266).

But in the middle of the eighth millennium, there are indications that something was amiss, at least in the Jordan Valley and areas farther to the west. There was widespread abandonment of Middle PPNB farming villages, including Jericho, Abu Gosh, Yiftahel, and Beisamoun, villages that had been inhabited for a considerable time. What caused the abandonment of the western settlements remains enigmatic, although based on speleothem analysis of changing carbon and oxygen isotopes and rising and lowering Dead Sea levels, there appears to be an increasing instability in climate at around 7,500 cal BC (figs. 1, 2), which, with

Fig. 1 (right). Measures of $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ in a speleothem from Soreq Cave, central Israel. (Modified from Bar-Matthews et al. 1999: fig. 2).

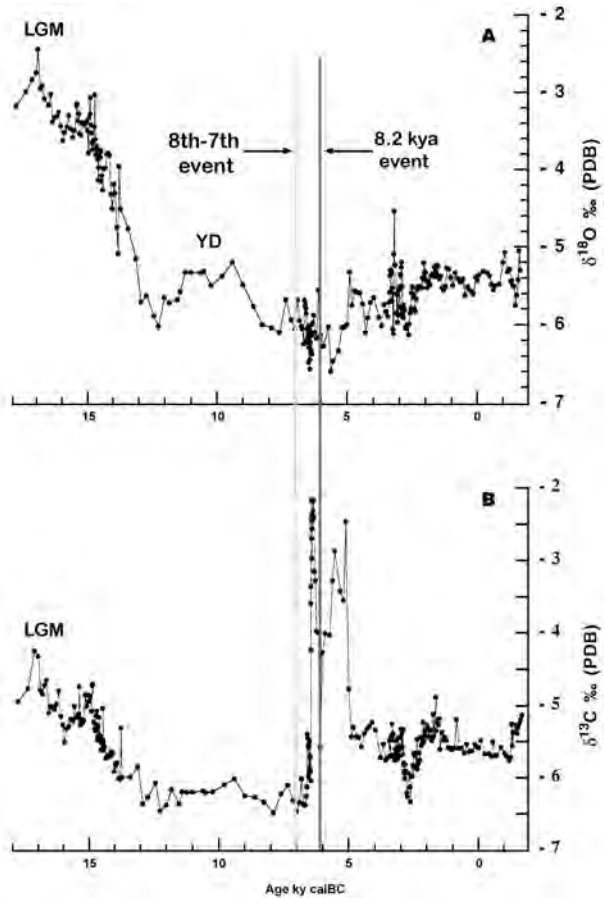
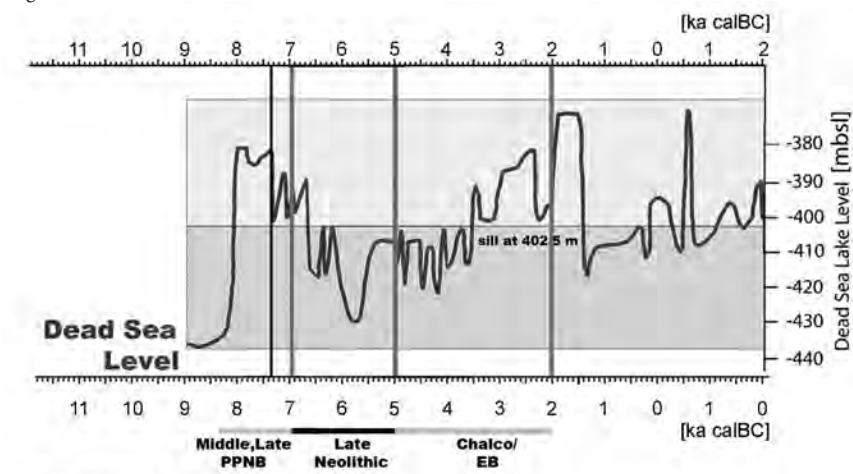


Fig. 2 (below). Precipitation variability as indicated by changing Dead Sea levels. The left-most vertical line indicates the change from the Middle PPNB to the Late PPNB and corresponding dramatic reduction in rainfall. The other vertical lines indicate the beginning and end of the Late Neolithic and the Chalcolithic/Early Bronze periods. After Migowski et al. 2006.



possible culturally induced environmental degradation, may have exacerbated agricultural productivity to the point that local fields could support only small populations (Rollefson 1992).

The Megasite Phenomenon in the Jordanian Highlands

Social Stress

The apparent devastation of settlement patterns in the Jordan Valley and Palestine at the end of the MPPNB and the beginning of the Late PPNB set in motion a new settlement pattern in highland Jordan that would have important consequences half a millennium later. Soon after 7,500 BC, some of the residents of the abandoned villages in the west simply dispersed elsewhere in the local region, but evidently a large proportion migrated into the highlands of Jordan, either joining already established MPPNB settlements such as Wadi Shu'eib and 'Ain Ghazal in the north (Rollefson 1989), or establishing new towns, including as-Sifiya, al-Basit, Basta, and 'Ain Jammam in the southern highlands (fig. 3; Gebel 2004a). The abandoned villages were all relatively small, averaging perhaps 2–3 ha in size (Gebel 2004a), but the new megasites were enormous, ranging in size from 6.5 ha at 'Ain Jammam (Waheeb 1996; see Rollefson 2005) to 7.5 ha at al-Basit (Rollefson 2002), 12 ha at as-Sifiya (Mahasneh and Bienert 2000) and Wadi Shu'eib (Simmons et al. 2001), and 14 ha at 'Ain Ghazal (Rollefson 2015), and Basta (Nissen, Muheisen, and Gebel 1987). Corresponding to site size and housing density, MPPNB populations were around several hundred people, but at the new megasites the number of inhabitants increased to a range of from ca. 1,500 to almost 3,400, even 4,000 (see Rollefson and Pine 2009: table 1).

The population of MPPNB 'Ain Ghazal is estimated to have been approximately seven hundred to nine hundred people, but within only a few generations that number had doubled (Rollefson and Pine 2009: table 1). The scalar stress on the large community certainly introduced tensions that required fundamental changes in social organization, particularly in view of the suddenly expanded demand for resources (see Dunbar 2008). One of the most visible changes was in architecture, where multifamily two- (and perhaps three-) story dwellings (Rollefson 1997; Nissen, Muheisen, and Gebe 1987) arose in the LPPNB in contrast to the single-story, single-family dwellings of the MPPNB. Presumably the inhabitants of the new residential structures were members of an extended family, pooling resources as units of economic production and consumption (Rollefson and Pine 2009: 475–76).

Another clear response to the crowded conditions in the LPPNB was in ritual. The skull cult so characteristic in the MPPNB of the southern Levant was no longer practiced in the region south of the Damascus Basin, possibly because the focus on ancestor veneration was inimical to social solidarity due to its associa-

Table 1. Chronological chart for major Neolithic periods in the southern Levant. Dates are cal BC. (The Late Neolithic refers to both the PPNC and the LN in the Black Desert.)

Period	Abbreviation	Begins	Ends
Middle Pre-Pottery Neolithic B	MPPNB	8,400	7,500
Late Pre-Pottery Neolithic B	LPPNB	7,500	6,900
Pre-Pottery Neolithic C	PPNC	6,900	6,500
Late Neolithic*	LN	6,500	5,000

tion with strong corporate concerns. Architecture again enters the picture: for the first time special ritual buildings appear in the form of small “shrines” that served as household cult buildings near the two-story residential structures. Importantly, imposing larger cult buildings set on the hillslope across the river valley from the main settlement evidently acted as a focus to unify the community that was under pressure to fission into smaller settlements elsewhere. In addition to these changes, social cohesion may have been enhanced through the development of new religious festivals that involved sodalities whose membership cross-cut corporate kinship units (Rollefson 2010).

Environmental Impact

Other stresses on the social fabric and on the environment also became problematic during the LPPNB. More mouths to feed meant more acreage to farm and more sheep and goats to take to pasture. The distances to new farmland grew over time, which probably instigated some disgruntlement among the newcomers, especially when it came time to transporting harvests some kilometers back to the settlement. Furthermore, additional families probably wanted more sheep and goats, so that there was increased pressure on the fields during the growing season. Herds of caprines would have to be taken farther and farther away until the harvest was completed, when the animals could be released onto the field stubble (Rollefson and Pine 2009).

Another major problem was forest resources. A change in architectural construction is plainly visible during the MPPNB at ‘Ain Ghazal. The earliest buildings in the latter part of the tenth millennium were single-room structures using large posts (up to 60 cm diameter) to support the roofs, but over time as newer buildings were raised and older ones renovated, dwellings became two- and three-roomed structures, with interior stone dividing walls taking on much of the support of roofs; what posts there were diminished considerably in diameter down to 10–15 cm (Rollefson and Köhler-Rollefson 1989: 81). The change in timber use reflected decreased building material in the near vicinity of the settle-

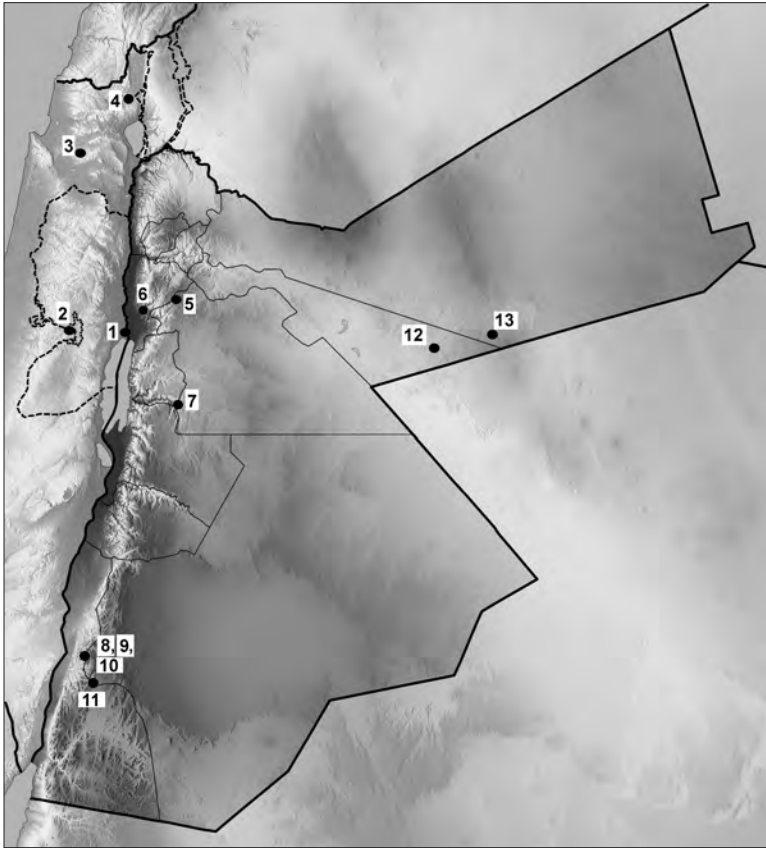


Fig. 3. Location of sites discussed in the text. 1–Jericho; 2–Abu Gosh; 3–Yiftahel; 4–Beisamoun; 5–Ain Ghazal; 6–Wadi Shu'eib; 7–as-Sifiyah; 8–al-Basit; 9–Ba'ja; 10–Basta; 11–Ain Jammam; 12–Wadi al-Qattafi mesas; 13–Wisad Pools.

ment, a consequence of deforestation. The alteration of the landscape is demonstrated by a remarkable decline in wild animal species at 'Ain Ghazal by the end of the MPPNB and the beginning of the LPPNB, dropping from more than fifty species in the MPPNB to only ten to twelve species in the LPPNB, reflecting the elimination of a broad range of eco-niches, particularly those associated with forest and woodland environs (Köhler-Rollefson 1988; Köhler-Rollefson, Quintero, and Rollefson 1993).

Much of the original calculation of forest depletion around 'Ain Ghazal for lime-plaster production was based on incorrect information regarding the content of lime in the floors of the 'Ain Ghazal houses, and new analysis of plaster indicated that except for timber used in the construction, wood for fuel to manufacture lime was negligible (Rollefson 2014a). But what had been ignored in un-

derstanding woodland degradation was the prosaic requirement of fuel for cooking, heat, and light. Ethnographic investigations of fuel needs among subsistence farmers in various parts of the world reported an average of 4.8 tons of wood per household per year over one hundred years, and taking this into account when tracking population growth at 'Ain Ghazal, the deforestation covered an area three times the original calculation based on lime production by the end of the LPPNB, with a radius of more than 10 km from the center of the settlement to the edge of woodlands (Rollefson and Pine 2009: 478, fig. 3, and table 1). Browsing habits of goats prevented natural reforestation in the degraded landscape.

Agro-Pastoral Subsistence in the MPPNB and LPPNB at 'Ain Ghazal

During the MPPNB and LPPNB at 'Ain Ghazal, domesticated goats and sheep accounted for 47–55 percent of the meat consumed by the inhabitants (von den Driesch and Wodtke 1997: 535). In contrast to Sherratt's contention that caprine herding based on dairy products would not be feasible until after the "secondary products revolution" in the fifth and fourth millennia (Sherratt 1981), Köhler-Rollefson proposed that dairy production was probably a major focus of caprine domestication as early as the ninth millennium BC (Köhler-Rollefson 1997: 561; Köhler-Rollefson and Rollefson 2002: 179), a position that has since been seconded by others (Vigne and Helmer 2007; Marciniak 2011).

Köhler-Rollefson has looked at herd sizes for households over this period of time, and the growth of human population had a serious impact on caprine populations. Forage requirements for goats (and sheep, which appear at 'Ain Ghazal at the end of the MPPNB) would be about 1.5 ha for two goats. In order to sustain herd size over time, slaughter of caprines should not exceed 33 percent (Köhler-Rollefson and Rollefson 1990: 8–9). Furthermore, live female goats and sheep are much more valuable in terms of protein and calories that they produce as dairy products in contrast to the meat they represent, so the take-off rate makes sense only for immature males and those females who no longer are productive in terms of dairy production or reproduction (see Rollefson 2014b: 22–23); meat protein was provided by the hunting of wild animals. Calculations of necessary vegetation stands for caprine herds based on "low consumption" slaughtering of adult caprines (two per year) versus "medium consumption" (six per year) and "high consumption" (one a month) indicate absurd pasturage for the largest rate of consumption (Köhler-Rollefson and Rollefson 1990: table 6), and even medium consumption seems unlikely. For the "low consumption" rate, each household would rely on a herd size of six to seven goats, and as families increased in number, so would the number of caprine herds.

Using the human population growth rates in Rollefson and Pine (2009: table 1), during the late ninth to the late eighth millennia BC, forage area for caprines would have increased substantially, especially when the population of 'Ain

Ghazal doubled around 7,500 BC. Recalling that caprine forage competed with land committed to farming, the distance herds had to be taken from the settlement increased enormously by the end of the eighth millennium BC, to the point that taking animals out of the vicinity of 'Ain Ghazal would be on a seasonal basis (Rollefson 2011: fig. 3).

The Eighth–Seventh Millennium Interface

While figure 1 shows possible climatic instability that could have impacted sustained settlement at the midpoint of the eighth millennium BC, the information from Soreq Cave at the threshold of eighth–seventh millennia period clearly shows a subsequent millennium of rapid and chaotic switches in temperature and precipitation in the highlands of Palestine near Jerusalem, and by extension, to the highlands of Jordan since the areas share a climatic regime (fig. 1). Given the large numbers of people (and sheep and goats) in each of the megasites, as well as the five centuries or more of intensive pressures on environmental resources (wood and soil fertility), the precipitous drop in annual rainfall intensified the impact on harvests and pasturage. Not surprisingly, megasite populations suffered severely. Many megasites were abandoned almost entirely, including Basta. At Basta a sediment unit up to 2 m thick in places, dated to the early or middle seventh millennium BC, is comprised of “tremendous amounts of detritus and mud flows” that “passed through and above the LPPNB layers” (Gebel 2004b: 100; also see table 1 and plates 2B and 2C), and only a few squatter families may have remained at the settlement at the close of the LPPNB. 'Ain Ghazal lost about 90 percent of its population in short order, falling to only three hundred to four hundred people at the beginning of the PPNC around 6,900 cal BC (Rollefson 2015). Sedimentological analysis of samples from 'Ain Ghazal showed “ever-increasing dust sedimentation from the PPNB and the Chalcolithic,” which emphasizes the climatic deterioration in the late ninth to eighth millennia BP (Zielhofer et al. 2012: 439).

The question arises, then, with the several thousands of people at each megasite, where did all of those families go? Surveys in Lebanon and Syria have not recorded any major increase in post-LPPNB settlements in those areas, although dispersal of small groups of refugee families may not have made a major impression on settlement recognition. A few small PPNC sites have been identified in Palestine (e.g., Atlit on the Mediterranean coast south of Haifa [Galili et al. 2005], Tell 'Ali in the Jordan Valley [Garfinkel 1994], and Ashkelon on the southern Mediterranean coast [Garfinkel 2008]), but the settlements hardly account for much of the migration. In view of the climatic deterioration, movement to the south into the Negev, Sinai, and Saudi Arabian Desert regions is an unlikely direction to look for the dislocated people. But one region that has been under-

researched are the current desert regions of southern Syria and the panhandle of Jordan in the so-called Black Desert of the basalt fields where survey and excavation projects are difficult to effect due to the almost impassable terrain in most of the region.

Jordan's Eastern Badia

The eastern and southern 85–90 percent parts of Jordan cannot support dry farming today, and for much (up to 60% or more) of the badia (“badlands,” or nonfarming region), annual rainfall is so bleak (<50 mm/year) that these areas are classified as “hyperarid.” The Jordanian badia is classified into two distinctive characters: the hamad and the harra. The former category refers to mostly level plains covered with flint gravels that currently have little seasonal resources, especially water sources and even seasonally rain-fed grasses. The harrat (singular harra) are the extensive flood basalt fields whose somber color gives rise to the epithet of the Black Desert.

The basalt boulder cover of the vast harra is one of the most important reasons that has discouraged research in the area, where transportation by motor vehicles is heavily impaired by very few routes of possible movement. In fact, most of the early twentieth century information of archaeology in the harra of Jordan was due to Royal Air Force pilots flying from Baghdad to Cairo (Maitland 1927; Rees 1929). Groundbreaking survey and excavation in the harra were undertaken in the 1970s, 1980s, and 1990s by Betts (Betts 1998, 2013). Of around one hundred Late Prehistoric sites (Late Neolithic, Chalcolithic/EB), only two had more than one or two residential structures: the rest had either none at all or only enough shelter for one or two families (Betts 2013: fig. 2.30 and pp. 40–43, 165, fig. 2.31). In comparison with the Late Neolithic of the Negev, where Rosen (2008) noted that there was probably seasonal macrobanding in large site, Betts commented that “there is no apparent evidence in the [Jordanian] badia” for such aggregations (2013: 189).

As illuminating as Betts’s research in the harra was, there appears to have been a sampling problem as it relates to the scale of exploitation by hunter-herder groups in the Neolithic period. In the early 2000s a limited survey in the harra came across an enormous site at the southeastern edge of the harra: Wisad Pools (Wasse and Rollefson 2005). A brief visit to the mesas in the Wadi al-Qattafi in 2007 also showed a cluster of structures at the foot of “Maitland’s Mesa.” But it was the aerial photography program begun in 1998 by Kennedy and Bewley that revealed how staggeringly dense the “works of the old men” (Maitland 1927) really were, not just at Maitland’s Mesa and Wisad, but all along the southern and eastern edges of the Jordanian harra (Kennedy 2011; see APAAME <https://www.flickr.com/photos/apaame/>); Google Earth satellite photos have also put the archaeology of the badia in much clearer perspective. Survey and excavations have

been underway at Wisad Pools and the Wadi al-Qattafi mesas since 2008, and the situation for the Late Neolithic is quite different from Betts's conclusion concerning large groups of families residing in the harra.

The Wadi al-Qattafi Mesas

Aerial photographs by the APAAME project were made available to the Eastern Badia Archaeological Project by Kennedy in 2008. As stunning as the density of structures was standing on the site in 2007, the APAAME and Google Earth images were simply overwhelming. Survey around Mesa 4 (M-4, also known as "Maitland's Mesa") documented more than 478 structures on the summit and on the slopes of the mesa (Rowan, Rollefson et al. 2015). Although the age for the great majority of these buildings remains unknown, excavation of the structure South Slope SS-11, a small shelter attached to a 15 m animal pen, produced a Late Neolithic 2σ ^{14}C date of 5480–5320 cal BC (Beta-346614). In the same area there were six other houses of similar corbeled construction attached to large corrals, as well as a minimum of four similar houses that were not attached to animal enclosures. Based on architectural similarity, it is likely that this cluster of buildings represents a single settlement of the Late Neolithic period (Wasse, Rowan, and Rollefson 2012).

The architectural situation around M-4 is repeated at several other mesas among the thirty or so lining both sides of the Wadi al-Qattafi: at the base of M-3, M-5, M-6, M-8, and especially M-7 the total is more than six hundred buildings, not including animal enclosures (fig. 4). There are different architectural techniques involved in the structures in addition to corbeling, so ascribing the different styles to a general age is not possible. Nevertheless, based on some retrieved flint artifacts from the interior of the collapsed buildings many—if not most—are likely Late Neolithic.

Wisad Pools

Structures are visible over an area of 4×7 km, although the densest clustering is found in a core area that measures about 3×3.5 km, centered around the natural and man-made pools in the short Wadi Wisad that drops only some 8 m from one plateau over a distance of 1–1.5 km to a mudflat (qa in Arabic, q'ān, plural). Most of the structures occur on the eastern side of the wadi (fig. 5). A pedestrian survey in 2008 sampled an area of c. 1.0×1.5 km of the core, counting 225 major constructions (not including animal pens or low burial cairns; Rollefson, Wasse, and Rowan 2014: 287); it is estimated that there may be more than a thousand structures of various types (dwellings, tumuli, tower tombs, etc.; see Rollefson, Wasse and Rowan 2014) within the entire core area, dating to the late prehistoric period, although it is likely that most of these are Late Neolithic in age.

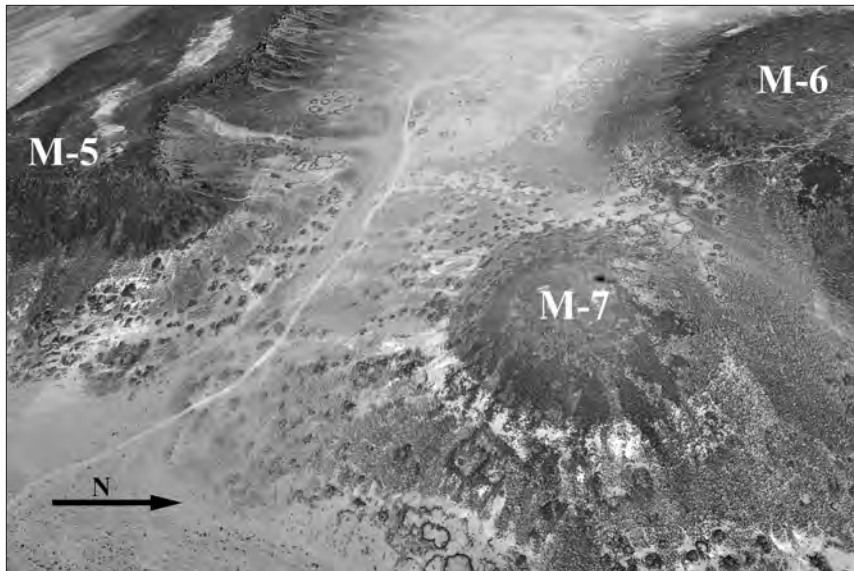


Fig. 4. Aerial view of structures on the slopes of mesas M-5, M-6, and M-7. The north arrow is approximately 60 m long. (Photograph by David Kennedy; © APAAME, by permission.)

The magnet that attracted hunter-herder families to Wisad for so long was undoubtedly the seasonal pools in Wadi Wisad. Measurements of Pool #1, based on recent silt lines on surrounding basalt blocks, indicated that the pool's capacity was more than 2,000 m³ (more than a half-million US gallons), and while Pool #s 2–8 were much smaller, Pool #9 was more than a half-kilometer long, ranging in width from 20–30 m and with a shallow depth (30–40 cm?)—it probably held millions of US gallons of water at its maximum, enough, apparently, to sustain a separate Late Neolithic village near its terminus (Rollefson, Rowan, and Wasse 2014: 290).

Several excavation seasons have been undertaken at Wisad. A tower tomb (W-110) on the west side of the Wadi Wisad that was looted just before the 2011 season was “salvaged,” finding that the Safaitic tomb had been constructed over a collapsed Late Neolithic dwelling. Due to the potential collapse of the overlying tower, little information about the LN dwelling could be retrieved other than a small collection on in situ flint artifacts, including a rare LN spear point and a bifacial knife.

East of the wadi two other structures have been fully excavated. Building W-66 was a simple circular corbeled house about 4.5 m in diameter with a central pillar to support the low slab roof; a smaller circular raised platform of basalt blocks was adjacent to the east. The floor was originally plastered with gypsum although little of it remained intact. The roof collapsed, leaving a shell that served

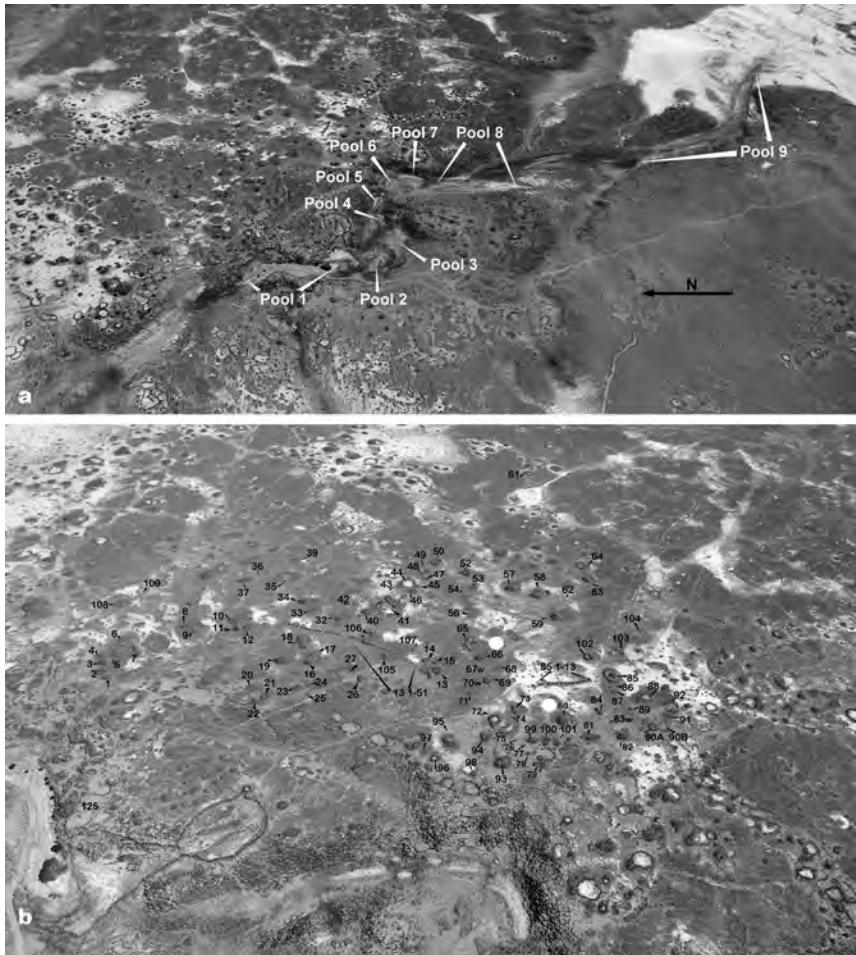


Fig. 5. (a) Location of the pools in the Wadi Wisad, view towards the east. (b) Aerial view looking northeast of the eastern sector of the Wisad Pools core areas. Numbers refer to structures documented in a 2009 survey; the two white circles at the center locate houses W-66 and W-67. (Original images by D. Kennedy. © APAAME, by permission.)

as a windbreak in which butchering, grinding, and tool manufacture took place; a cache of eleven graduated pestle-rollers was found against the southeastern wall (Rollefson, Rowan, and Perry 2011). Charcoal in the plaster coating of a basin dug into the original floor yielded a 2σ ^{14}C date of 6600–6460 cal BC (Beta-346621; Rowan, Rollefson et al. 2015: 185).

About 100 m to the southeast of W-66 is structure W-80, another circular corbeled house, but larger (ca. 6 m diameter) and much more complex (fig. 6). As was the case for W-66, the original roof had collapsed but the building remained

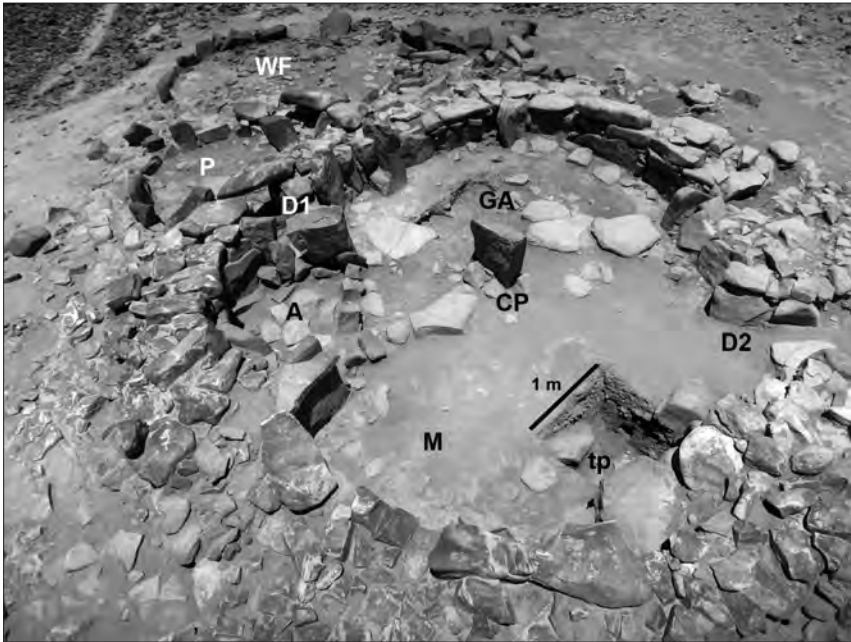


Fig. 6. House W-80 at the end of the 2014 season. WF=western forecourt; P="porch," D1=western doorway; A=alcove, GA=grinding area; CP=central pillar; M=main room; D2=main entrance; tp=test pit. North is at upper right corner of image. Interestingly, doorway D2 and the center of the alcove A are aligned with the summer solstice sunrise. (Photograph by Y. Rowan.)

in use as a windbreak for several activities. Five 2σ radiocarbon dates ranged from 6590–6580 cal BC (Beta 366676) near the original floor to 5710–5610 cal BC (Beta 366675) higher in the fill.

The grinding area (GA in fig. 6) produced 67 milling stones, including 46 handstones and 21 grinding slabs; eight of the grinding slabs had deep cupmarks for use as mortars (fig. 7). (Five of the grinding slabs from W-66 also bore cupmarks.) These groundstone items are intriguing in view of the identification of charcoal from deciduous oak trees (*Quercus* cf. *ithaburensis*) (Rowan, Wasse et al. 2015); *Tamarix* sp. charcoal has also been identified.

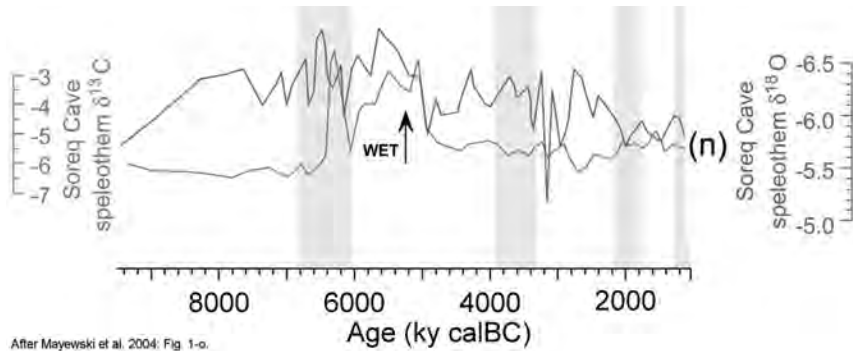
Since deciduous oaks are prodigious producers of acorns (Rosenberg 2008: 170), the cupmarked slabs may indicate acorn processing at Wisad Pools (Mason and Nesbitt 2009; Olszewski 1993). The presence of oak at Wisad Pools is remarkable if one considers the current bleak landscape throughout the harra. According to Willcox (1999: 714), 350 mm of rainfall is necessary to support deciduous oak stands, although one suspects that the effects of terrain and drainage into refuges might reduce the absolute amount of precipitation necessary to sustain copses of oak. The Wadi Wisad drains a considerable area, and subsurface



Fig. 7. Grinding slabs with cupmarks inside W-80 at Wisad Pools. The large erect stone at right center is the central pillar in figure 6. (Photograph by Y. Rowan.)

moisture along its short length may have been able to provide for clusters of trees. Even so, since Wisad is located in a hyperarid environment today, there are clear implications for a moister landscape in the Late Neolithic.

The interpretation of a more humid regime during the Late Neolithic is provided by Mayewski et al. (2004). Figure 8 reflects a wetter set of conditions from 6,800 to 5,000 BC that would generally coincide with the radiocarbon data for W-66 and W-80 at Wisad Pools. Adding to the probability of a lush vegetation cover (including arboreal presence) is the identification of a paleosol beneath the floors of both W-66 and W-80 (Rowan, Wasse et al. 2015). The current surface of the site is characterized by exposed basalt bedrock and silt deposits of variable thickness; seasonal rainfall washes off the modern surface immediately, draining into the Wadi Wisad and nearby mudflats. But beneath the house floors, protected from water erosion and wind deflation, is a reddish, gritty, and porous sediment that would have absorbed winter rains, setting the foundation for greater vegetational density and quality compared to today, as well as the requirements for arboreal presence in the landscape that during the Late Neolithic.



After Mayewski et al. 2004: Fig. 1-a.

Fig. 8. A period of increased precipitation from 6,000–5,000 BC interpreted from the speleothem from Soreq Cave. (After Mayewski et al. 2004.)

Discussion and Concluding Remarks

The upheavals of the mid-eighth millennium and the seventh millennium BC in the agrarian area of the southern Levant resulted in severe dislocations of populations in the southern Levant. The reasons for these catastrophic developments probably are associated with a combination of climatic change and prolonged culturally induced environmental degradation. In both cases thousands of people were affected by the turbulence, requiring relocation to smaller communities in some instances but also massive migrations in others. A portion of those refugees apparently opted for a major readjustment of a Late PPNB agropastoral subsistence economy, at first gradually changing to a tethered nomadic pastoral approach in the PPNC (Köhler-Rollefson 1992; Rollefson and Köhler-Rollefson 1993) and finally separating into segregated but seasonally integrated farming and herding subsistence economies in the Yarmukian Pottery Neolithic (Rollefson 1993).

The PPNC period at 'Ain Ghazal (6,900–6,500 cal BC) was one of much reduced conditions: buildings reverted to single-room houses with dirt floors, and symbolic expressions were rare; the sudden appearance of multiple burials suggests poor health and possibly epidemic disease, including tuberculosis. But the climatic conditions appear to have improved during the Yarmukian period, with a possible expansion at 'Ain Ghazal on the west bank of the Zarqa River (Kafafi et al. 2012). Early seventh millennium BC exploitation of the steppe increased (during the PPNC, called the “early Late Neolithic” by Garrard, Colledge, and Martin 1996), and by the Yarmukian period in the second half of the seventh millennium, there was a full-blown hunter-herder subsistence economy in the harra: faunal remains show a large dominance of gazelle hunting at Wisad, with hare and caprines combined about equal to the gazelle counts (Wasse, personal communication).

Looking at the forbidding vistas of the Black Desert today, the influx of herders into the harra might seem to have been a tragedy comparable to the “Dust Bowl” migrations in the United States during the 1930s. Granted, dislocation from a stable sedentary situation to one of impermanent settlement moving from location to location on a seasonal basis may seem daunting, but the circumstances were not as dire as the current circumstances in eastern Jordan might indicate. The abundance of game (especially gazelle, which would have been hunted with the assistance of domesticated dogs) ensured a reliable source of protein without depleting the “domesticated capital” of sheep and goats, which would have been much more valued for their contribution to a dairy-based protein diet. Acorns would have contributed a substantial source of oils, fats, proteins, and calories as well. Based on the breeding parameters of sheep and goats, herds of caprines could have increased greatly within a single human generation, allowing potential accumulation of “wealth” as a resource to share with less fortunate families, leading to a Big Man situation that may have led to the emergence of a hierarchically arranged social organization well before such developments appeared in the farming regions of the Levant (Rollefson 2014b).

Research in the harra of Jordan’s panhandle is still in its infancy, and an enormous effort of investigation in the many concentrations of domestic and pastoral structures throughout the harra must be followed up soon. Not mentioned in this report are the many enigmatic “works of the old men,” many of which are probably related to the Late Prehistoric past and their association with settlements such as those at Wisad Pools and the mesas at Wadi al-Qattafi (Rollefson et al. 2016). These are elements that the Eastern Badia Archaeological Project intends to pursue in the near future.

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The Nature of the Beast: The Late Neolithic in the Southern Levant

A. NIGEL GORING-MORRIS AND ANNA BELFER-COHEN

Abstract: We evaluate suggestions as regards the assumed sharp division between the Early (so called Pre-Pottery) and the Late (so called Pottery) Neolithic in the southern and central Levant. The traditional division marker was the appearance of ceramics, which has become rather an obsolete criterion, since there is growing evidence that ceramics as an established phenomenon appeared earlier during the Early Neolithic. Is such a division still valid? The answer is equivocal depending upon which aspect of the Neolithic human existence we focus. At least in the southern and central Levant, it seems that the existence of an independent, Late (Pottery) Neolithic stage is rather of a short and limited duration, as parts of what was previously considered Late Neolithic are currently assigned to the following Chalcolithic era, that is, the Wadi Rabah phase. Similarly, the Yarmukian phase, which was considered as the first stage of the Late Pottery Neolithic, under detailed scrutiny and with more information at hand, displays closer similarities with the later stages of the Early Neolithic, namely the PPNB. Finally, even if one can come up with some unique characteristics, are they sufficient to consider the existence of an independent stage in local human history, given the problematic dating of southern Levantine sites originally assigned to this stage?

Keywords: Neolithic, Levant, Yarmukian culture, Wadi Rabah stage, *hiatus palestinien*

Based upon her excavations at Tell es-Sultan (Jericho) in the lower Jordan Valley, Kathleen Kenyon (1957) proposed a terminological framework for the early Holocene periods in the Levant: Pre-Pottery Neolithic A and B (PPNA and PPNB) and Pottery Neolithic A and B (PNA and PNB). Today this framework continues to form the basis for the periodization of the Neolithic sequence throughout much of the Near East.

A decade later, in his seminal overview of the Levantine prehistoric sequence, Jean Perrot (1968) discussed the so-called *hiatus palestinien*, a period of over one thousand years, between the PPNB and the PN, during which the southern Levant was supposedly abandoned. Since then, numerous data have accrued to indicate that this proposed “gap” in occupation was merely a vagary of

the history of research (e.g., Bar-Yosef 1977, 1992; Garfinkel 1993; Gopher and Gophna 1993).

The traditional division between the Early (PPN or EN) and Late Neolithic (PN or LN) has been the appearance of ceramics. However, this approach became somewhat obsolete, since there is growing evidence for ceramics, albeit in small quantities, already appearing during the Early Neolithic, whether in the southern Levant, for example, PPNB Kfar HaHoresh, or further afield in the Near East (and see Ben-Michael 2014; Biton, Goren, and Goring-Morris 2014; Le Mière 1986; Nieuwenhuyse, Akkermans, and van der Plicht 2010; Nishiaki and Le Mière 2005; Özdoğan 2009). Thus the question may be raised as to whether there are indeed such marked differences in the material culture between the Early “Pre-Pottery” and the later “Pottery” Neolithic. We believe the answer is equivocal, depending upon which aspect of Neolithic human existence we focus.

It seems to us that the Late Neolithic, at least in the southern and central Levant lacks unique characteristics that justify its assignment as a separate and distinct cultural period. In examining the archaeological evidence pertaining to various aspects of human existence, it appears that Late Neolithic occurrences portray many of the same characteristics as those of preceding (and succeeding) entities, the differences being rather in frequency and intensity rather than demarcating distinct and new socio-cultural phenomena. This raises the question as to whether these differences are sufficient to warrant the existence of a culturally independent stage. Given the problematic dating of south Levantine sites originally assigned to this stage to begin with, this is not as self-evident as was assumed previously. We suggest that this is not just an issue of semantics—it appears that recent research has uncovered many details that beg a new reassessment of the subdivision suggested by Kathleen Kenyon more than fifty years ago.

In the following, we focus upon the earlier stages of the Late Neolithic and examine from the perspective of the material culture remains how it articulates with the preceding PPNB. We incorporate in the PPNB what others have called “PPNC” or Ghazalian culture (e.g., Khalaily 2006, 2009; Rollefson 1990a).

The Late Neolithic 1 (LN 1/Pottery Neolithic A/PNA) (~8350–7850 cal BP)

Two LN 1 cultural entities have traditionally been defined within the Mediterranean zone: the “Yarmukian” and the “Lodian/Jericho IX” (Garfinkel 1999; Gopher and Gophna 1993). These two entities are primarily differentiated on the basis of ceramic styles and, to a lesser extent, lithics (Garfinkel 1993; Gopher 1995; Gopher and Gophna 1993; Goring-Morris and Belfer-Cohen 2014). They appear

to partially overlap chronologically and geographically, likely reflecting also the regionalization that was already apparent earlier during the PPNB.

Still, we believe that in many respects the earlier part of the Late Neolithic represents what can best be termed as an “epi-PPNB mega-site” village phenomenon; what others have termed “proto-urbanism,”¹ following on from the final PPNB (FPPNB/PPNC; Ben-Shlomo and Garfinkel 2009; Bienert 2004; Garfinkel and Ben-Shlomo 2009; Gebel 2004; Rollefson 1990a, 1990b). This continues the terminological approach advocated by Kenyon (1953) who believed that the phenomenon of the later “city states” of the Fertile Crescent already emerged with PPNB Jericho, and although locally this process was disrupted during the LN, it was assumed that elsewhere in the Near East it continued, as evidenced at LN Çatalhöyük in central Anatolia (Hodder 2005; Mellaart 1964). More recently it appears that previous estimates of population size at the site were exaggerated with the numbers dropping drastically from ca. 8000 to ca. 2500 individuals at most (see Cessford 2005 vs. Kuijt and Marciniak forthcoming); indeed, we believe that community size estimates should probably be reduced significantly for most PPNB “mega-sites” in the Levant.

The appearance of pottery in quantity with the onset of the LN 1 was interpreted as heralding a complete break with the EN (=PPN). Yet, there is considerable evidence for continuity in many other aspects of the material culture. The following are examples indicating such continuity; clearly, we are touching upon the classic conundrum of where and on what basis one can separate between cultural stages.

LN 1 Site Distributions and Subsistence

Mediterranean zone LN 1 sites are usually found at low elevations, whether along the Rift Valley or in the coastal plain, as well as at the edges of the major alluvial valleys (Goring-Morris and Belfer-Cohen 2014). Here, fully agricultural subsistence based on domesticated plants (wheat, barley, and legumes) and animals (sheep, goat, cattle, and pigs) could be practiced, as reliance on hunting and foraging declined (e.g., Asouti and Fuller 2013; Fuller, Willcox, and Allaby 2012; Marom 2011; Marom and Bar-Oz 2009; Willcox 2013; Willcox and Savard 2011; Zohary, Hopf, and Weiss 2012). This reflects a continuity of PPNB trends, when domesticates first appeared in growing numbers, albeit in a geographically mosaic fashion. We should also note that there is considerable evidence to indicate geographic re-alignments of PPN settlement distributions during the course of the PPNB (e.g., Barzilai 2010; Gebel 1997). Furthermore, the deleterious effects of the 8200 yr climate event and environment on settlement patterns require careful evaluation (Weninger et al. 2009).

1. We have difficulty in accepting the use of the term “proto-urbanism” within the framework of the Levantine Neolithic, since we believe that the term denotes more than the size of the settlement/community, but rather designates specific social, economic, political, and ritual organization.

Site Organization and Architecture

Sha'ar Hagolan is the largest known Yarmukian site (~15 ha). This focal site is favorably located on the alluvial fan of the perennial Yarmuk River within the central Jordan Valley and is far larger than known contemporaries (Ben-Shlomo and Garfinkel 2009; Garfinkel 2006, 2014; Garfinkel, Ben-Shlomo, and Marom 2012; and references therein). Nevertheless, whether Sha'ar Hagolan really displays early signs of urban concepts remains moot, as systematic surveys indicate patchy densities of finds across the site (Miller 2002). Accordingly, we believe that a more parsimonious interpretation is that Sha'ar Hagolan comprised spatially discrete, perhaps clan-based clusters of wards and that, *sensu stricto*, only a certain proportion of architectural units were actually likely to be absolutely contemporaneous (Goring-Morris and Belfer-Cohen 2008).

One should recall that Early Neolithic (PPNB) residential architecture displayed considerable variability reflecting combinations of regional and chronological patterns: the cell plan, the pier (or corridor) house (sometimes two-storied), as well as more agglutinative ("pueblo"-like) plans (Goring-Morris and Belfer-Cohen 2013b). Indeed, the question arises as to how radical is the appearance at Yarmukian Sha'ar Hagolan of walled residential compounds with courtyards, separated by alleys. It seems likely that such arrangements illustrate increasing concerns with privatization, as well as providing penning for recently domesticated and herded animals. It appears that, just like the Early Neolithic, the LN displays architectural variability, with the apsidal architecture at 'Ain Ghazal being such a local variant (Kafafi 1998; Rollefson 2008).

There is also evidence for communal architectural endeavours at Sha'ar Hagolan. The Building II complex in Area E is quite sprawling and yielded 75 percent of the recovered clay and stone figurines deriving from open areas within the complex. Another notable communal endeavour is the wells, already observed much earlier in the PPNA and PPNB, as at PPNA Mylouthkia in Cyprus, and FPPNB Atlit Yam and 'Enot Nisanit in Israel (Galili and Nir 1993; Guilaine, Briois, and Vigne 2011; Peltenberg et al. 2001; Tepper 2014).

Other Yarmukian sites are more modest in scope, as at 'Ain Ghazal, Mishmar Ha'Emeq, Nahal Zehora II, and Munhatta, reflecting a gradual "sizing down" from the LPPNB and FPPNB "mega-sites" (Barzilai and Getzov 2008, 2011; Gopher 1989, 2012; Goring-Morris and Belfer-Cohen 2014; Kafafi 1998; Perrot 1993; Rollefson 2008).

Art and Symbolism

A rich assemblage of large and small, quite elaborate human figurines in clay and stone are a hallmark of the Yarmukian, albeit with significant differential inter- and intrasite concentrations, being especially abundant at Sha'ar Hagolan



Fig. 1. MPPNB Engraved anthropomorphic figurine from Kfar HaHoresh. (Photograph by Gabi Laron.)



Fig. 2. Yarmukian engraved anthropomorphic figurines from Sha'ar Hagolan. (From Garfinkel, Ben-Shlomo, and Korn 2010: pl. XVII.)

(Garfinkel 1993). While most are distinctive and unique to the Yarmukian (Garfinkel and Miller 2002), certain iconographic elements reflect origins in the PPNB, as do many of the zoomorphic figurines and geometric motifs. An incised limestone human figurine from a Middle/Late PPNB context at Kfar HaHoresh is particularly comparable (figs. 1 and 2), while another from a Late(?) PPNB context at 'Ain Ghazal (fig. 3) is also very similar to some of the statues at Sha'ar Hagolan (Garfinkel and Miller 2002; Schmandt-Besserat 2013). Interestingly, each of these examples represents a different iconographic approach to the human figure.

Pyrotechnology and Ceramics

Traditionally, the primary contrast between the material culture of the PPNB (Kenyon 1957) and the Yarmukian (Stekelis 1951, 1966, 1972) was the sudden and rapid appearance of pottery. The coil-made pottery of the LN 1 includes storage and cooking vessels, as well as finer wares, often displaying distinctive herring-bone incised and/or painted decorations (Amiran 1969; Garfinkel 1999). It was



Fig. 3. LPPNB(?) anthropomorphic figurine from Ain Ghazal. (From Schmandt-Besserat 2013: fig. 5.1.1.)

believed that only unfired clay vessels (as well as *vaisselle blanche* [white ware], not to mention lime-plaster) predate the LN 1. Yet, in recent years the presence of small quantities of fired ceramics in secure PPNB contexts has been documented within the framework of a well-developed PPN pyrotechnological tradition (Ben-Michael 2014; Biton, Goren, and Goring-Morris 2014; Le Mière 1986; Le Mière and Nishiaki 2005).

Furthermore, it is important to note that the globular shapes and decorative motifs of most Yarmukian pottery likely mimics earlier (PPN) perishable goods not commonly preserved in the archaeological record. The exceptional preservation in Nahal Hemar cave in the Judean desert furnished examples of both so-

phisticated basketry and weaving (Schick 1988). In this instance we can identify continuity between the PPN and LN in terms of the morphologies of the items being produced; the major and significant change relating to the raw material media employed, namely, the organic items being replaced by clay, enabling the mass production of items previously made of perishables.

The Chipped Stone Industry

A distinctive characteristic of the PPNB lithic industry in the Mediterranean zone of the southern Levant had been the use of the bidirectional (naviform) knapping technique for the systematic production of elongated, convergent blade blanks, which were modified into a suite of standardized tool forms (projectile points, sickle blades, borers, and burins). However, the bidirectional technology is rarely, if ever, numerically dominant, with large quantities of ad hoc tools deriving from less standardized blade and flake technologies.

Previously, it was proposed that the LN 1 Yarmukian lithic assemblages display a radical break in chipped stone technologies, even though the early reports did indicate the presence of distinctive PPNB-type bidirectional cores (Stekelis 1966, 1972). That such items, indeed, were not intrusive from earlier levels at Sha'ar Hagolan, but rather were integral to at least the earlier Yarmukian phase there was subsequently confirmed by later studies (e.g., Barzilai and Garfinkel 2006).

The most distinctive items of the Yarmukian lithic toolkit are the projectile points (including the introduction of mostly small pressure-flaked arrows, though there are also extensively pressure-flaked large ones). Yet, they are found in lower frequencies than previously, while the deeply denticulated/crenellated sickle blades (another hallmark of the Yarmukian lithic toolkit), as well as awls, burins, and bifacials are rather common (Matskevich 2005), presumably reflecting the gradual shift to fully agricultural life-ways.

Exotics

The relative quantities and sources of exotic prestige items shift, with smaller quantities (in most sites) of imported items from multiple sources—for example, obsidian, marine molluscs, and greenstone—as compared with the PPNB. Since the widely accepted explanation of such imports is commodities exchange rather than commerce, it is quite possible that this reflects the growing independence of the local communities as they were able to sustain a viable genetic pool and became less dependent on far-flung ties, just before the beginning of organized marketing and commercial intercourse. This is again a development occurring quite gradually, reflecting an ongoing process, the origins of which could be seen already in the later PPN period.

Ritual and Funerary Practices

PPNB burials are often discussed in terms of subfloor primary interments and subsequent skull removal, some plastered (Gopher and Hershkovitz 1994; Kuijt 1996, 2000), yet these traditions were by no means ubiquitous. Rather, recent research indicates that PPNB burial practices were highly variable and complex, including the presence of on-site and off-site burials; primary and secondary; males, females, and children; single and multiple; with various combinations thereof, all being subjected to similar treatments (Goring-Morris and Belfer-Cohen 2013a; Santana et al. 2015). While some burials were placed in simple pits, others occur under plastered surfaces or within cists, at times being associated with or marked by stelae. Notwithstanding the dearth of human remains within most settlements, it was only with the excavations at E-LPPNB Kfar HaHoresh that we actually learned of the existence of special ritual/cemetery sites (Eshed, Hershkovitz, and Goring-Morris 2008; Goring-Morris 2000). The investigations at FPPNB Atlit Yam demonstrated spatial segregation on site with the presence of a separate cemetery area at the edge of the settlement close to a cult area (Galili et al. 2005).

Currently there are very few human burials documented from within either Yarmukian or Lodian settlements. This likely indicates that the deceased were disposed of in such a manner as to leave no traces or, more probably, in separate cemetery areas or sites currently undetected. Indeed, the excavations of the later LN 2 Wadi Raba site of Newe Yam revealed a separate cemetery area adjacent to the settlement itself (Galili et al. 2009).

Several infant burials at PPNB Kfar HaHoresh—for example, L1361 and L1362—were associated with organic imprints in the sediment of the grave that probably represent the remains of the baskets or mats in which they were buried. Other burials on-site were interred in clay lined pits, for example, L2108 and L1036 (Goring-Morris 2005). Hypothetically, these could represent the forerunners of the infant jar burials of the LN 2 Wadi Raba culture (Gopher and Eshed 2012; Goring-Morris 2000, 2005; and see above regarding the shift from perishables to ceramics). LN infant burials in jars likely replace the above using a different receptacle, so that the postulated radical change may have been less dramatic than superficial appearances would indicate (Goring-Morris 2005: 95, 101).

The cemetery at Newe Yam also includes numbers of post sockets that do not obviously appear to represent the outline of structures (Galili et al. 2009). This recalls the stone-lined post-sockets at PPNB Kfar HaHoresh, which similarly do not appear to represent architectural features (Goring-Morris 2005). Perhaps they should be viewed as markers associated with the graves. The box-like, stone-lined cist graves at Newe Yam also find analogues at PPNB Kfar HaHoresh (Goring-Morris 2005).

The tradition of skull removal has a long history, being an especially characteristic feature of PPNB burial practices (Kuijt 1996). Although skull removal has not been documented to date from LN 1 Yarmukian/Lodian contexts, it has been noted in LN 2 Wadi Rabah sites at Ein el-Jarba, Nahal Beset I and, perhaps, at Kefar Gil'adi (Galili et al. 2009 and references therein).

Contrary to the obvious continuity in burial practices, continuity in ritual activities is less noted. Yet, there is the use of caves as repositories with secluded or difficult access, for example, the Yarmukian and Wadi Raba occupations in Nahal Qanah cave, Samaria (Gopher and Tsuk 1991), or in remote settings with unusual contents, just as in previous periods (Belfer-Cohen and Goring-Morris 2007). Nahal Hemar cave in the Judean desert represents the most obvious PPNB analogy (Bar-Yosef and Alon 1988).

Discussion

The issue of when archaeological periods should be differentiated and separated is of great importance, as it implies profound changes rather than simply different variants or environmental adaptations, representing "points of no return" in human cultural evolution. Thus the very fact of continuity or change in certain aspects of human existence does not suffice for such separation; it is either the revolutionary nature of the change, for example, replacing the subsistence base from hunting-gathering to agriculture, or the accumulation of differences pertaining to many life-ways domains that justifies such a move.

The case of the "Pre-Pottery" and "Pottery" Neolithic periods as they came to be defined and used in the Levant illustrates the problematics of defining pre-historic time units (i.e., periods) and cultural entities given the constant accumulation of new data contra the need for basic frameworks and definitions in order to understand and reconstruct the past. History of research and paradigms of the scholars involved in the research play a prominent role in creating those frameworks.

Thus, at the very beginnings of Levantine Neolithic explorations, René Neuville (1934) included the "Tahounien" phase I, without pottery (currently "traditional" PPN) and "Tahounien" phase II, with pottery (currently the "traditional" PN) together with the coeval "Ghassoulian" (with pottery, currently "Chalcolithic"), under the rubric of the "Énéolithique" Age (period). His approach basically ignored the presence or absence of pottery in defining archaeological periodization.

Subsequently, while excavating at Jericho, Kathleen Kenyon (1956) came to the conclusion that the absence or presence of ceramics justified a separation between levels without ceramics, namely the Pre-Pottery Neolithic, and levels with ceramics, the Pottery Neolithic. She considered this as a denomination of both, a time-frame ("period") and the observed cultural units on-site. Through

time, these terms were adopted to primarily indicate time-frames, encompassing a variety of archaeological “entities.” One should bear in mind that in those days little was known of the nature or scale of Neolithic (*grosso modo*) settlements, or the prevailing subsistence modes. The significant time gap (of ca. 1,000 years) assumed to exist between the Pre-Pottery and Pottery Neolithic helped in accepting Kenyon’s observations as valid throughout the whole of the Levant (Perrot 1968 and see above). The fifty (and more) years of research since Kenyon’s subdivision of the Neolithic was proposed has disclosed much new data and the supposed gap in occupation of the region has been shown to be but a figment of imagination reflecting the vagaries of the history of research.

Recent research indicates that the phenomenon of large-scale village communities already emerged during the course of the PPNB—the Middle and especially Late and Final (=PPNC) phases—continuing through the initial stages of the Yarmukian. This negates the original interpretation of Sha’ar Hagolan, when Stekelis (1951, 1972) contrasted the well-constructed lime-plastered rectangular structures of the PPNB with the supposed reversion to pit dwellings during the Yarmukian. In addition, ongoing research documents that the economic transition to domesticated plants and animals was already well underway during the course of the PPNB (e.g., Zeder 2011 and references therein).

In retrospect, it seems that under close scrutiny and with more information at hand, the Yarmukian culture, which has been interpreted as the first stage of the Late Neolithic, actually displays closer similarities with the later stages of the Early Neolithic, namely, the PPNB, as observed in most domains of human existence (Goring-Morris and Belfer-Cohen 2014a, 2014b; and see above).

Similar inferences can be made for what was defined as the later phase of the Late Neolithic, that is, the Wadi Rabah stage. This stage is currently considered by some researchers as portraying features more typical of the following Chalcolithic (Bar-Yosef and Garfinkel 2008; Goring-Morris and Belfer-Cohen 2014a, 2014b). Even researchers preferring to retain the traditional division between the Neolithic and Chalcolithic stress the elements of continuity between the two (e.g., Rowan 2014).

Another issue to be considered concerns the parallel developments in the adjacent semi-arid margins of the southern Levant. These areas were previously *terra incognita* when the original chrono-cultural framework was proposed for the Mediterranean zone. Here, too, research has proceeded apace over the past fifty years. Yet, broadly the same terminological chrono-cultural framework is still employed to accommodate developments within the marginal zone, albeit with regional cultural entities—“Tuwailan,” “Timnian,” “Besoran,” “Qatifian,” and the like (Gilead 2009; Rosen 2011, and references therein). Here, developments reflect the shift from Epipaleolithic and PPN hunting-gathering to LN pastoral-

ism. This results in an absurd terminological dissonance and conundrum of an “aceramic Pottery Neolithic” (and see Goring-Morris and Belfer-Cohen 2014b).

In summary, it seems to us that, more than fifty years after Kenyon’s subdivision of the Neolithic, and more than forty years after the proposal of a *hiatus pal-estiniensis*, the intensive research carried out since then clearly indicates that there was no chronological gap between the Early and Late Neolithic (PPN and PN); and that the differences between these two main stages are far more nuanced and less stark than was assumed in the past.

We should be wary about changing long established terminological frameworks, but the present state of affairs leads to absurd situations. Without suggesting radical measures, we would like to draw attention to this state of affairs, demonstrating once again the impact that the history of research has had on our understanding and interpretations of hard core data.

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Çatalhöyük and Sha'ar Hagolan: A Tale of Two Cities

YOSEF GARFINKEL

Abstract: The Çatalhöyük and Sha'ar Hagolan communities faced a new situation in human evolution, namely, the agglomeration of a very large population at one site. Each community developed different strategies to cope with the scalar stress it faced. This analysis concentrates on six different cultural phenomena and discusses the meaning of these differences. Ultimately, they reflect different social structures: the site of Çatalhöyük presents a fascinating large community that struggled with population pressure on the nuclear-family level, while at Sha'ar Hagolan the community was organized on the extended-family level.

Keywords: Neolithic, Near East, scalar stress, Çatalhöyük, Sha'ar Hagolan, nuclear family, extended family, Yarmukian culture

During the seventh and sixth millennia BC, very large Neolithic communities were established in the Near East. While earlier Neolithic settlements reached an area of up to ca. 3–4 ha, now some sites were much larger: 'Ain Ghazal, 12 ha; Basta, 14 ha; Çatalhöyük, 16 ha; and Sha'ar Hagolan, 20 ha. It is indeed possible that not all the site area was occupied simultaneously, and that the total site area is composed of a few different settlement phases. This, however, may be the case for the earlier, smaller sites, as well. So, from our point of view, the main development is the appearance of sites four or five times bigger than had ever before been known in human evolution. These earlier communities had to take into consideration the large population that inhabited the site, or, in other words, scalar stress. Previous studies on population density have pointed out that scalar stress refers to the stresses inherent in large population aggregations, which must be reduced through strategies as diverse as increasingly hierarchical social organization, group fission, and increasing incidence of group ritual (Carneiro 1967; Johnson 1982; Friesen 1999; Bandy 2004).

Population pressure has been recognized as a main factor in human evolution (Hassan 1981). While its effect can be examined on the macro-level, such as migration to the New World or the beginning of agriculture, here I would

like to explore the effect of population pressure on the micro-level, specifically on the Sha'ar Hagolan and Çatalhöyük communities (fig. 1). The inhabitants of these ca. 8,000-year-old villages (calibrated; all dates are calibrated) had to struggle with a rather new situation—how to organize a community of a few thousand people living together in the same place. They did not have much relevant background and thus had to find their own original solutions.

To estimate the population size of these two sites, we need to convert the site size to population size. Various estimates have been suggested for population densities, with the following number of people per hectare: 200 (Marfoe 1980: 320); 250 (Broshi and Gophna 1984: 41–42); or 300 (Renfrew 1972: 251). If we take the lower estimate, of ca. 200 people per hectare, there were ca. 3,200 people at 16-ha Çatalhöyük and ca. 4,000 people at 20-ha Sha'ar Hagolan. As we do not know if

the entire site area had been occupied simultaneously, we can take only half of the above-mentioned estimations. In this case there were ca. 1,600 people at Çatalhöyük and ca. 2,000 people at Sha'ar Hagolan. Nonetheless, even if each site was occupied by a thousand people, it was an enormous community for its time.

The concentration of so many people in one settlement affected human relationships. There was a loss of the unity, intimacy, and freedom that are typical of small groups. Instead, there were competition, aloofness, and alienation. In a large society, well-defined and strict behavioral laws must be developed to regulate and organize the individual into a cohesive social unit. The critical issue is how did these large communities adapt to the new demographic situation in which a thousand people, or more, lived together?

Two case studies, Çatalhöyük and Sha'ar Hagolan, are compared here. Six different phenomena are examined for the two sites: the dwelling unit, passage-



Fig. 1. The Location of Sha'ar Hagolan and Çatalhöyük.

ways and site organization, water supply, burial customs, symbolic expression in anthropomorphic figurines, and body ornaments. Selection of these particular elements for analysis was based upon the remarkable differences between the two sites noted for each of the six.

As we will see below, these two communities are completely different from each other in these features. Each one presents a different strategy to cope with scalar stress. I argue that these differences reflect a different level of social organization. Çatalhöyük was mainly organized on the nuclear-family level, continuing the earlier Neolithic tradition. Sha'ar Hagolan, on the other hand, represents new developments, and was organized on the extended-family and the community levels. As both sites are well known and much data on each have been published, I will present them here briefly, with references to the main publications.

Çatalhöyük is located in the Konya Plain in southern Anatolia, on the bank of the Çarsamba Çay River. The site covered an area of 16 ha and reached a maximum depth of 17 m. The site was discovered and excavated by Mellaart during four large excavation seasons in the years 1961 to 1965 (1962, 1963, 1964, 1966). Very large areas were uncovered and a magnificent settlement was unearthed. This project was stopped by the Turkish authorities after the "Dorak affair," in which imaginary items were presented by Mellaart as authentic finds (Pearson and Connor 1968). In a later similar episode, imaginary wall paintings from Çatalhöyük were also presented as authentic discoveries (Mellaart, Balpınar, and Hirsch 1989). A new project was started at the site by Hodder in the year 1993, and is still active today. During these excavation seasons many new data have been uncovered and published (Hodder 1996, 2000, 2005a, 2005b, 2006, 2007, 2010, 2013).

Sha'ar Hagolan is located in the central Jordan Valley, on the northwestern bank of the Yarmuk River (fig. 2). It is the type-site for the Yarmukian culture, which occupied large parts of the Mediterranean climatic zones of Israel, Jordan, and Lebanon. The site was first excavated by Stekelis, who conducted five excavation seasons between the years 1949 and 1952 (Stekelis 1972).

In 1989, I renewed the excavations at Sha'ar Hagolan. Eleven excavation seasons took place (1989–1990, 1996–2004) and nearly 3,000 m² were unearthed in five different locations of the site. An extensive surface survey, along with the study of some thirty soil sample trenches dug illegally by local farmers, indicates that the entire size of the Neolithic settlement is ca. 20 ha (Miller 2002b). The maximum depth of accumulation, as exposed in Area G, is ca. 3 m. The excavation results have been summarized in five final reports (Garfinkel and Miller 2002; Garfinkel and Ben Shlomo 2009; Garfinkel, Ben Shlomo and Korn 2010; Rosenberg and Garfinkel 2014; Garfinkel et al. in press), as well as popular presentations in museums exhibits and two popular books (Garfinkel 1999, 2004).

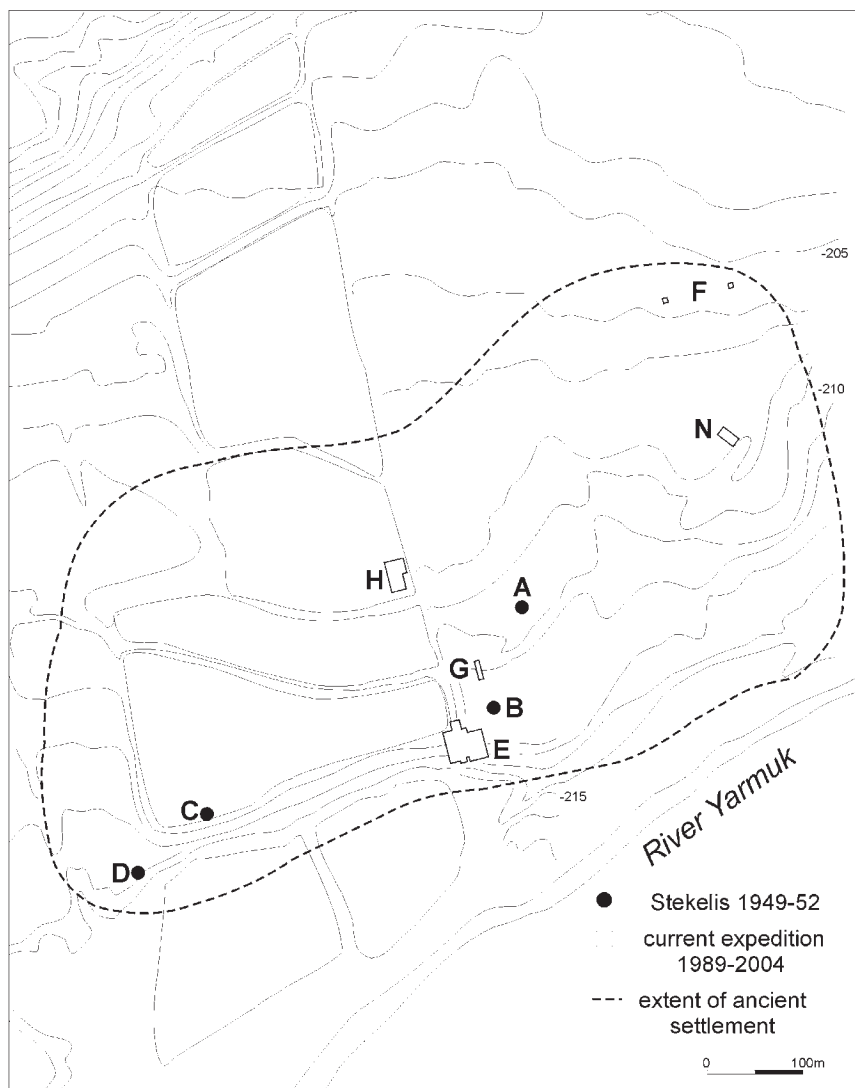


Fig. 2. Sha'ar Hagolan. General plan and the location of the various excavation areas.

The Dwelling Unit

The architecture of the dwelling units and their organization in the village reflect the social and economic organization of the society. This connection had been discussed by various scholars in relation to various case studies (for the Neolithic of the Near East see, for example, Flannery 1972, 2002; Kuijt 2000; Garfinkel 2002). In the case of Çatalhöyük and Sha'ar Hagolan two totally different approaches to the organization of the dwelling units can be seen.

At Çatalhöyük, the basic dwelling unit “consisted of one main room entered through the roof in which there was an oven and burial and other platforms, plus one or more side rooms used for storage, food preparation and other domestic tasks” (Hodder 2006: 110). Each unit is quite small, ca. 40 m² in size, indicating that it was used by a nuclear family. These units were built in a condensed manner, with no open areas or passageways between them.

At Sha’ar Hagolan, the basic dwelling unit was a large courtyard structure, three of which were fully uncovered.

Building Complex I in Area E

Building Complex I (fig. 3) consists of a large triangular courtyard with eight rooms around it, and its total size is 233 sq. m. The only entrance to the building is located on the south side of the courtyard, where a paved threshold is found. The building has the shape of an asymmetrical pentagon with two right angles and a narrower southern side. The outer walls of the rooms connect to each other and separate this building from the rest of the village.

This complex comprises eight closed rooms enclosing an open courtyard. The rooms are designated on the plan by the letters: B, C, D, E, F, G, H and I, and the courtyard by the letter A. Five of the rooms have a beaten earth floor and three (D, G, and I) are paved with closely fitting flat basalt pebbles. A clearly defined entrance was not found in any of the stone-paved rooms, and they were probably entered through a window-like opening that was higher than the currently preserved tops of the walls. Since these rooms are distinguished by their paved floors and lack of an entrance at floor level, their function was probably different from that of the other rooms. The paving and the high entrance may have been for purposes of insulation, perhaps against insects, rodents or damp. This would have provided good conditions for storage, and these rooms should be seen as storerooms.

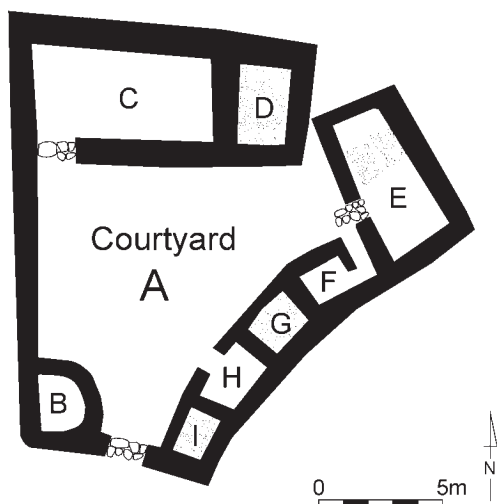


Fig. 3. Sha’ar Hagolan: Schematic Plan of Building Complex I in Area E.

The building displays a modular arrangement in which there are three units each consisting of a room and a storeroom: C–D, F–G, H–I. A fourth unit in the northeast corner (E) does not have a storeroom, but half of the room is taken up by two stone-paved installations, which could have been granaries. These data suggest a modular pattern repeating itself four times around the courtyard. In view of the large size and modular arrangement, it was occupied by four nuclear families.

Building Complex II in Area E

Building Complex II (fig. 4) consists of a large elongated courtyard with twenty-four rooms around it, and its total size is 710 m². It is, without doubt, the largest structure from such an early period to have been uncovered in the Near East. The rooms were arranged in approximately seven clusters (C, F; E, G, H, I; O, P, Q, R; S, T, U, V; N–M; L–K; X–Y). This complex was thus used by a large, extended family, with eight nuclear families living together.

Building Complex I in Area H

This building (fig. 5) consists of a large courtyard with ten rooms around it, and its total size is 257 m². Four of the rooms have paved floors, either made of stone (E, G, K) or an exceptionally thick plaster (C). These rooms do not open directly to the courtyard and apparently were storage rooms. They are located adjacent to rooms with beaten earth surfaces and together create four pairs (B–C, D–E, F–G, J–K). Rooms H and I are open directly to the courtyard and do not have a storage facility nearby. This complex was thus used by a large extended family, with four nuclear families living together, and two additional rooms for other uses, or for unmarried offspring.

At Sha'ar Hagolan, a new type of architecture can be seen: large complexes with four to eight modular units organized around a central courtyard. Living in such proximity as we see at Sha'ar Hagolan indicates close kinship, probably an extended family (Flannery 2002; Garfinkel 2002). In this respect, Sha'ar

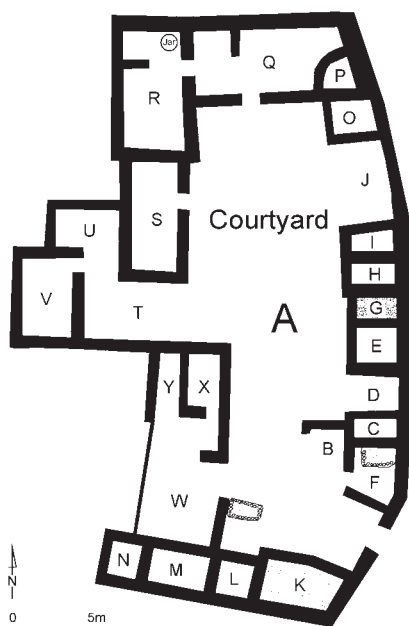


Fig. 4. Sha'ar Hagolan. Schematic plan of Building Complex II in Area E.

Hagolan presents a sharp contrast to Çatalhöyük, which was still a settlement organized on the nuclear-family level.

Passageways and Site Organization

While the houses discussed in the previous section represent the activities of the families, the village plan reflects the social organization and order at the community level. In early Neolithic sites, houses were built some distance from each other, and open areas were left near each building (Cauvin 1978; Garfinkel and Ben-Shlomo 2002). These open areas allowed for movement within the village. There was no preplanning in such settlements.

A different approach was developed in later parts of the Neolithic period. In some sites we see the construction of buildings on both sides of an elongated open area. This creates formalized passageways, which we term streets when they are wider and alley when they are narrow. Such streets are known in the seventh and sixth millennia BC from a few sites, like Aşıklı Höyük in Anatolia (Esin et al. 1991), Ghwair and 'Ain Ghazal in Jordan (Najjar 2002; Rollefson and Kafafi 1994: 13–14) and Tell Kurdu in the Amuk Valley in southern Turkey (Özbal et al. 2004: 40–41, figs. 2–5). In order to create the passageways, the houses must be arranged in relation to one another, with the outer walls parallel. This required some level of preplanning and coordination on the community level.

At Çatalhöyük the dwellings of the nuclear families were built abutting each other, in a very condensed layout (Mellaart 1967: 54–63). There were no passageways between the buildings. The movement of people within the site, and among the houses, is reconstructed to have been via the rooftops. Access via the roof meant climbing a ladder up and down each time one wanted to leave or enter the house. This put heavy burden on older people, pregnant women, animals and the transformation of goods or building materials. The problematic space organization of Çatalhöyük was further defined by Cutting (2003: 5–17) using “space syntax technique,” which analyses the depth and connectivity within and

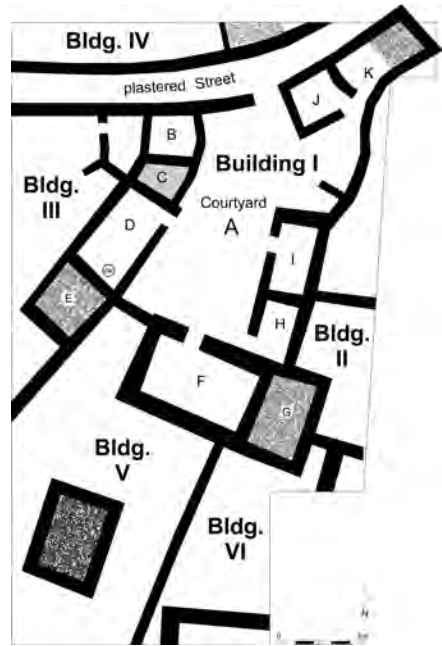
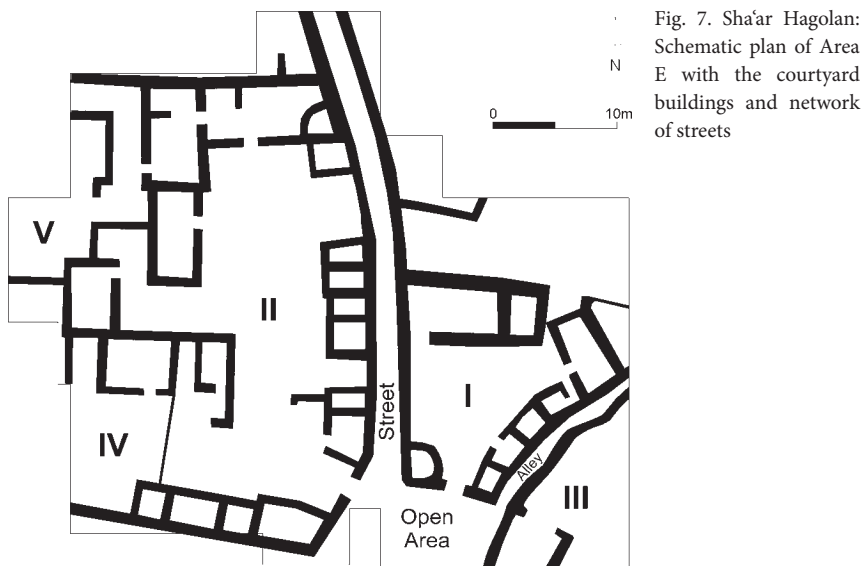


Fig. 5. Sha'ar Hagolan: Plan of Area H with the courtyard buildings and a street.



Fig. 6. Sha'ar Hagolan: the Main Street in Area E, leading to the Yarmuk River. (Photograph by Yosef Garfinkel.)



between architectural units. No wonder the Çatalhöyük model was a dead end in the evolution of human architecture.

At Sha'ar Hagolan, two kinds of passageways were observed. There were straight and wide main streets with pebbled surfaces in Areas E and H (fig. 6), and there was a narrow alley with a beaten-earth surface in Area E (fig. 7). The orientation of the street and alley in Area E is more or less perpendicular to the river. Thus, these paths lead from the inner part of the settlement to the riverfront, enabling easy access to the permanent water source of the population. As the river was lower than the settlement, the streets also provided a draining system in cases of heavy winter rain. The roads were paved with layers of pebbles mixed with mud plaster and their surfaces were renewed from time to time. The plastering of large, open, public space required much work. While the upkeep of the houses was undoubtedly the responsibility of their residents, the streets' maintenance must have required the cooperation of the entire community.

The building and maintenance of the streets raises questions concerning public decision-making: Who planned the street network, and who observed that the plan was indeed carried out as required? Who organized the replastering? How often were the streets repaired? Who carried out the work and who supervised it?

Water Supply

A reliable source of drinking water is the most basic requirement for human physical survival. Hence, through the entire history of humankind all temporary

encampments or sedentary settlements were located near or within a short walk of permanent water sources such as springs, rivers, and freshwater lakes. Indeed Sha'ar Hagolan is located on the bank of the Yarmuk River and Çatalhöyük is located on the bank of the Çarsamba Çay River.

In the last few decades, the excavations of early Neolithic sites in the Levant uncovered a large number of water wells dated to 7500–6000 BC. This is an additional and unexpected aspect of human activity as early as the Neolithic period. The active digging of wells reaching the underground water table reflects an innovative approach to water provisioning in sedentary communities. It is a testimony to the hydrological knowledge and technological capacities of early Neolithic farmers in the Near East.

The earliest Neolithic wells, dated to ca. 8000 BC (Pre-Pottery Neolithic B), were uncovered in two Cypriot sites: Kissonerga-Mylouthkia and Shillouro-cambous. In Kissonerga-Mylouthkia, near the Mediterranean coast of western Cyprus, excavators exposed two cylindrical shafts dug into the local sandstone (Peltenburg et al. 2000, 2001). Each well was about 2 m in diameter and 7–8 m deep. However, since erosion and modern quarrying have destroyed the upper part of the wells, the exact original depth is unknown. No additional construction was involved in shaping these simple rock-cut shafts. In Shillourocambous, located inland in southern Cyprus, three wells were reported (Guilaine and Briois 2001: 41, Structures 2, 66, 114). They were cut in the local rock, like the two wells reported from Kissonerga-Mylouthkia (see, for a section of Structure 66, Guilaine et al. 1999: 2, fig. 1).

Three wells were reported from the underwater Pre-Pottery Neolithic C (ca. 7000 BC) site of Atlit Yam, near the Mediterranean coast of Israel (Galili and Sharvit 1998; Galili et al. 2002), but only one of them has been described in detail (Galili and Nir 1993). The current location of this well is 12 m below sea level. Another well from this period had been uncovered at 'Enot Nisanit, near Tel Megiddo, Israel (Tepper 2014). The upper part of the well was constructed, whereas the lower part was hewn through the soft limestone bedrock down to a friable and impermeable layer of chalk at a depth of 8.5 m. Four components were discerned in the installation of the well: a hewn shaft, construction above its lowest course, a built wall at the top of the shaft, and the stones that make up the well-head.

Digging the shaft of the well in order to reach the aquifer requires much work, involving digging through various sediments or even chiseling the bedrock. This is time consuming and difficult labor; it is beyond the capacity of an individual family and had to be organized on the community level.

Wells have not been reported from Çatalhöyük. The site has been excavated on a very large scale, and there are courtyards in which there would be free space for digging the narrow shaft. No wells, however, had been uncovered at the site. Probably the river was the main water supply for the community.



Fig. 8. Sha'ar Hagolan. The well during excavation. (Photograph by Yosef Garfinkel.)

At Sha'ar Hagolan a well was uncovered in an open area of the site (fig. 8; Garfinkel, Vered, and Bar-Yosef 2006; Garfinkel and Vered 2009). The well was constructed in three main stages: digging, construction, and backfilling. First, a stepped pit was dug directly into the virgin soil. Next the lower part of the stone lining was constructed directly against the Lisan formation. Large elongated basalt river pebbles were carefully chosen and laid with their narrower side facing the inner part of the shaft. The stones line only the upper 2.5 m of the well and do not reach its bottom, probably to enable the cleaning of the well from time to time. The same feature was observed at 'Atlit Yam, where the lowest 2 m were not lined.

After this, the stone lining was built in the wider part of the pit and the gap between the lining and the pit's edge was filled. The stone construction and the backfilling were carried out simultaneously, probably two or three courses of stone at a time. This would have created a working platform for the builders, as well as stabilizing the stone construction. The sediment used for the backfilling of the pit was dark, rich in organic material, and mixed with knapped flint, broken pottery, and animal bones. This is clearly an anthropogenic sediment and not the original whitish Lisan clay.

There is no shortage of water at Sha'ar Hagolan, which is near the Yarmuk River. Thus, it seems that the digging of the well has more to do with the quality of the water supply than to the quantity of water. Indeed, in areas with concentration of thousands of people and their flocks, water can easily become polluted. Maintaining a basic level of health is vital for living in large communities. The well was in an open area rather than inside one of the large courtyards probably because such an investment of time and labor was beyond the capacity of the extended family, and was organized on the community level.

Burial Customs

Funerals and treatments of the dead is an important aspect for every human society (see, e.g., Binford 1971; Huntington and Metcalf 1979; Chapman et al. 1981; Campbell and Green 1995; Pearson 2000). Burials often reflect various aspects relating to social organization. Indeed we can see a vast difference in the data on burials between the two sites.

At Çatalhöyük, vast data relating to burials have been uncovered. The deceased were buried inside the dwellings and a large number of skeletons were uncovered in each house (see, e.g., Mellaart 1967: 204–9; Hawkes and Molleson 2000; Andrews, Molleson, and Boz 2005; Hodder 2006: 220–25). It is clear that the burials took place within the nuclear family, which buried each member inside its house.

At Sha'ar Hagolan the data on burials are very scanty. Despite the large excavation area—ca. 3,000 m², only a few burials had been uncovered. It seems quite clear that at Sha'ar Hagolan most of the population was buried inside the dwelling unit. The skeletons of the Sha'ar Hagolan population are probably buried in a central location, similar to the skull house of Çayönü (Özdoğan and Özdoğan 1989), or in a cemetery near the site that has not yet been uncovered.

Human Figurines

Anthropomorphic figurines have been reported from various Neolithic sites in the Near East, as can be seen for example at Çatalhöyük, Haçılar, Jarmo, Munhata, 'Ain Ghazal, or Nevalı Çori (Mellaart 1967, 1970; Broman Morales 1983; Rollefson 1983, 1986; Garfinkel 1995; Morsch 2002; McAdam 2008). Over the years, much work has been devoted to the methodological study of the figurines (see, e.g., Ucko 1968; Voigt 1983: 186–95; 2000; Hamilton et al. 1996; Miller 2002a; Moorey 2003; Bailey 2005; Meskell 2007).

As discussed by Hays (1993), large Neolithic sites—preurban communities—are characterized by extensive rich assemblages of artistic expression. Hays explains that the “intensification of artistic activities in these cases is closely related to the problem of organizing large communities in the absence of social stratification” (1993: 81). Indeed in the Near Eastern context, the large sites of 'Ain Ghazal (12 ha), Çatalhöyük (16 ha) and Sha'ar Hagolan (20 ha) produced very significant art assemblages. In the same way, the hundreds of dancing scenes from the Neolithic period reflect the intensification of communal rituals (Garfinkel 2003).

Çatalhöyük presents a magnificent rich repertoire of human and animal figurines, wall paintings, seals, and amulets. Over one thousand human figurines have been reported, a splendid variety of representations of the human figure (Mellaart 1967; Hamilton 2005b; Meskell 2007; Nakamura and Meskell 2013). These figurines were presented in diverse poses: standing, sitting on a chair, sitting on the back of an animal, or in a sitting position with no seat. The hands of these figurines are depicted at the sides of the body or supporting the breasts. Many other variations are found among the anthropomorphic figurines from Çatalhöyük. Each figurine represents the imagination of the individual who made it, with no obligation to any mode of standardization.

At Sha'ar Hagolan and related sites of the Yarmukian culture, the situation is entirely different. Yarmukian figurines were made in accordance with clear conventions that dictated a specific final product. A single type of anthropomorphic figurine dominates the assemblage (fig. 9). To the best of my knowledge, this is an unparalleled phenomenon in early village communities, but is characteristic of urban societies in the Near East and beyond. This specific type is a female fig-



Fig. 9. Sha'ar Hagolan: the typical anthropomorphic clay figurines of the Yarmukian culture. (Photograph by D. Haris.)

ure, made in clay, with twenty-five specific attributes, approximately twenty of which were meticulously executed on almost every example found: elongated head (head cover?), diagonal incised eyes, ears, earrings, nose, absence of neck, veil/hair at the nape, clothing (usually a two-part garment), breasts, left arm under the breast, right arm on the right thigh, fingers, navel, emphasized pelvis, absence of female genitalia, thighs, knees, lower leg, seated posture, and feet (Garfinkel, Ben Shlomo, and Korn 2010: 31). All of the 115 known examples of this type, from the few complete figurines to the numerous leg fragments, appear to have been made in the same style. The exact same type of figurine with the same long list of attributes has been found at other sites of this culture. The accessories associated with this figure— head cover, earrings, hairdo, and clothing—must reflect a specific narrative that is expressed by these characteristics. The accessories defined the figure and vice-versa. If the figure were presented without these attributes, it would represent a different persona. This is reminiscent of the portrayal of saints in Christian art, where St. Peter, for example, is portrayed with a fish and keys.

The other large category of anthropomorphic representations is comprised of the pebble figurines (fig. 10). These are rather simple, oval, river pebbles, engraved with a schematic anthropomorphic figure. Stylistically, they are very different from the clay items, however, iconographic analysis demonstrates that they depict the same anthropomorphic figure (Garfinkel, Ben Shlomo, and Korn 2010). There are 119 such items at the site of Sha'ar Hagolan, and about 30 from the sites of Munhata, Byblos, Hamadya, and 'Ain Ghazal.



Fig. 10. Sha'ar Hagolan: typical anthropomorphic pebble figurines of the Yarmukian culture. (Photograph by D. Haris.)

The appearance of exactly the same type of clay and pebble anthropomorphic figure at many sites is a clear indication of common symbolic expression over the large territory of the Yarmukian culture. How was the canonization actually achieved? And how did each Yarmukian individual know how to model the same imaginary figure? It is possible that a large statue of this figure stood in a central cultic building at the site that was the central place of pilgrimage for the entire Yarmukian community. The image of this large statue was copied in smaller clay figurines or engraved on river pebbles.

Canonization is a visual rhetoric that takes complicated matters and presents them in a simple, standardized, understandable form. Instead of forcing the viewer to interpret each anthropomorphic figurine or statue, the viewer is provided a familiar image with a well-known set of fixed attributes (figs. 11, 12). In urban societies, kings and slaves, young and old, male and female, the entire community shared this collective public imagination. This mechanism creates social cohesion and serves as a common base for the entire population of the state, regardless social status. In this urban context canonization is associated with official religious establishments of priests and temples that control the concepts of the supernatural, as well as directly controlling the production of artistic expression. Why did canonization develop in the Yarmukian culture of the Neolithic period? The answer probably relates to the population pressure observed

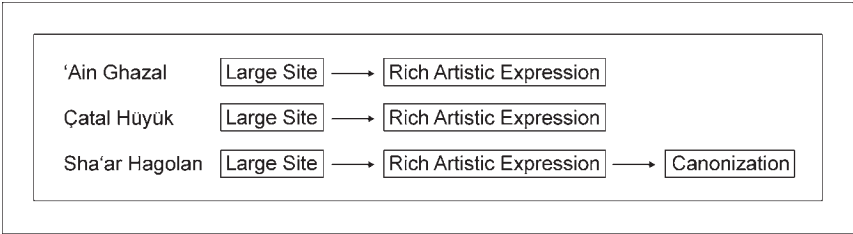


Fig. 11. Site size, rich artistic expression and canonization at three Neolithic sites.

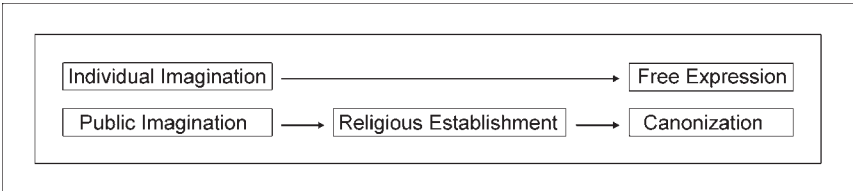


Fig. 12. Individual imagination and public imagination.

at the site. In this way religious aspects had been transformed at Sha’ar Hagolan from the household level into the community level.

Body Ornaments: Beads and Pendants

Ornaments placed on the human body emphasize the individual. In different societies different types of decoration are used, sometimes encoding information about age, gender, social statues, and the like.

Çatalhöyük presents a very rich collection of beads and pendants. Thousands of these had been reported from both house deposits and burials (Mellaart 1967, pl. XV, figs. 103–104; Hamilton 2005a; Bains et al. 2013). In the year 2005, 22,180 beads and pendants were reported from Mellaart’s excavations and 4,048 beads from Hodder’s new excavations (Hamilton 2005a, table 14.1). Through the excavation of the 2010 season, the new excavations had unearthed 7,433 beads and pendants. It seems that both expeditions have uncovered a total of nearly thirty thousand beads. It is clear that at Çatalhöyük individuals used beads extensively in daily life or during various social gatherings.

At Sha’ar Hagolan, only sixteen beads have been uncovered from the large excavation area (Bar-Yosef Mayer 2014). All the site sediment was screened during the excavations in a 2 mm mash, so the lack of beads is not the result of excavation bias. We conclude that it was not a common practice for the population to appear with body decoration. The individual body was not accentuated through the wear-

ing of beads, pendants, and the like. It is clear that while it was very popular to use body ornaments at Çatalhöyük, at Sha'ar Hagolan this was not a common practice.

Discussion

Six different cultural aspects had been presented above, indicating a clear difference between the Çatalhöyük and Sha'ar Hagolan communities. What is the meaning of these differences and what are they reflecting? It seems that the large building complexes, which were used by extended families, are the key for understanding the picture. Large Neolithic structures, which could be the dwellings of extended families, were found at a number of sites dating to the later part of the Neolithic period (late Pre-Pottery Neolithic or Pottery Neolithic): Bouqras, Basta, Tell es-Sawwan, Zaghe, and Hassuna (Garfinkel and Ben-Shlomo 2002; Flannery 2002). Flannery has attributed these developments to increasing economic complexity:

married sons remain attached to the household of their father because the combination of two tasks—cereal agriculture and the grazing of herd animals—requires a division of labor beyond the capacity of a nuclear family. By 5500 B.C. many Near Eastern villages not only grew wheat, barley, lentils, and peas for food, but also raised flax for linen and had added cattle and pig to the herding of sheep and goats. A family of 15–20 simply had more manpower to perform all the disparate tasks in such an economy, which could include some kind of craft production as well. (Flannery 2002: 424)

While, like Flannery, we interpret the large structures as the dwellings of extended families, we offer a different reason for their development. In the context of the Pottery Neolithic period of the southern Levant, only the site of Sha'ar Hagolan presents such architecture. Mixed economies, as suggested by Flannery, appear at all other sites as well, but they do not exhibit large courtyard buildings. On the contrary, many of them, such as Munhata, Hamadiya, Habashan Street, Jebel Abu Thawwab, Lod, Teluliyot Batash, Jericho, and Ghrubba, present only pits or small rounded huts of the type characterizing the very early stages of the Natufian and early Pre-Pottery Neolithic A. Thus, in this case, there is no direct link between the economy of a settlement and its physical and social structure.

When the architecture of the dwelling units, the open areas, and the streets are all taken into account, it seems that Sha'ar Hagolan exhibits a tripartite division of space at the site. This suggests three levels of social organization in the community, as follows (fig. 13).

A. The Individual Household (The Nuclear Family)

The domestic space of a nuclear family was quite limited (10–15 m²). One might question whether this would have been adequate for the use of a nuclear family,

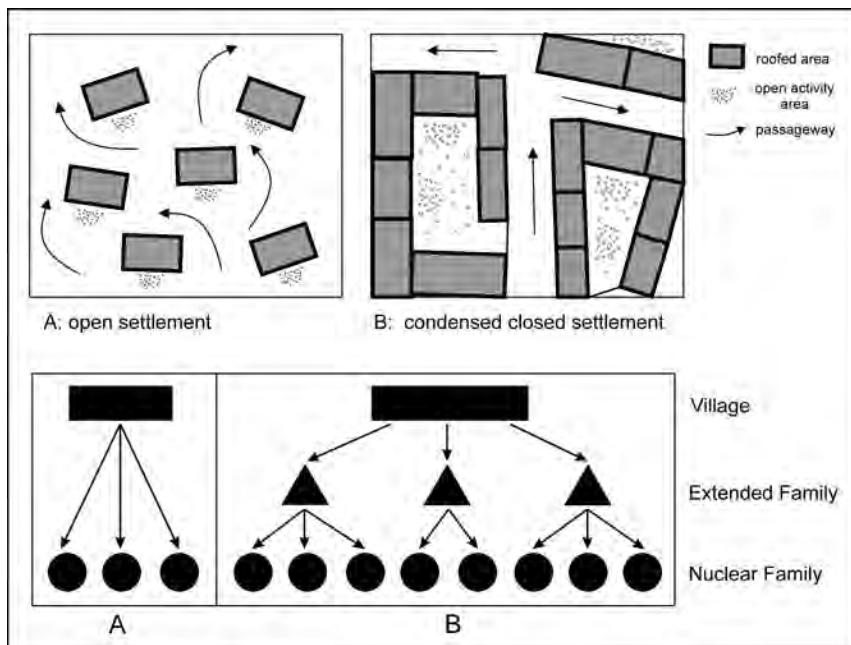


Fig. 13. Neolithic site structure and social organization.

but the size of other Pottery Neolithic structures, including those at Munhata, Jericho, Lod, and Jebel Abu Thawwab, is quite similar: these sites contain small rounded structures, usually 2–3 m in diameter, their size not exceeding 15–20 m². Thus, it appears that nuclear families lived in quite a limited space in the Pottery Neolithic period.

As demonstrated by the analysis of Building Complex I, each nuclear family had a dwelling room and an adjacent storage room. Storage facilities were found inside the small rooms, either as paved closed rooms or as large granary jars below the floors.

B. The Extended Family

The open areas between the houses in Neolithic villages were generally used for cooking, storage in pits, and various other household activities. At Sha'ar Hago-lan, however, the open area was integrated into the building as an enclosed courtyard. This placed the open area under tight control, limiting access to approved persons. To this day, personal belongings, wealth, and women are protected in the enclosed courtyard in some parts of the Near East. In such traditional societies, women are barred from public areas, and their main activity areas are confined to closed courtyards. Most of the finds—pottery, flint, animal bones,

stone vessels, and figurines—were found in the courtyard. Refitted flint items from the courtyard of Building Complex I indicate flint knapping activity. Pits and various installations were also found, including large basalt implements such as mortars and grinding slabs. These were the common property of the entire extended family.

Ethnographic observations on human behavior under population pressure indicate the construction of large modular houses for the use of extended families. This case has been observed among the Inuit tribes of North America, during their aggregation period (Friesen 1999).

C. The Community Level

The third level is the entire community, that is, the village. The deep involvement of this level is reflected at Sha'ar Hagolan in the system of streets and the annual maintenance of the street's surfaces.

At Çatalhöyük the site organization, with its condensed dwelling units and the lack of passageways, developed without any preplanning, and is simply the final result of activities carried out on the nuclear-family level. There are no indications of extended families or the involvement of a village authority. We can explain the other phenomena discussed above in the same way. The digging of wells required much communal work, which was organized at Sha'ar Hagolan, but not at Çatalhöyük. The burial of the dead was the task of the nuclear family at Çatalhöyük, and the bodies were buried inside the nuclear family dwelling. At Sha'ar Hagolan hardly any skeletons were found under the floors, indicating that the burial was thus organized in formalized cemetery. Canonization of the main anthropomorphic figure, in clay or using river pebbles, at Sha'ar Hagolan indicates a public imagination, and may indicate some sort of religious establishment. At Çatalhöyük each of the hundreds of figurines was modeled in a free way, and they reflect private imagination. There is no canonization in the various artistic expressions uncovered.

The Çatalhöyük community reflects the early Neolithic way of life, with the nuclear family as the basic social level. There are no indications for extended families, or meaningful central authority. At Sha'ar Hagolan, on the other hand, new concepts were in place: large courtyard buildings, extended families, formalized passageways, digging wells, canonization of human figures, and probably a central burial ground. In such a society as at Sha'ar Hagolan, which emphasized the extended family and the settlement authority, there was no place to emphasize the individual person. For this reason only sixteen beads have been uncovered at Sha'ar Hagolan compared with the approximately thirty thousand beads that have been reported from Çatalhöyük.

Indeed, the site of Çatalhöyük presents a fascinating large community, that struggled with population pressure on the nuclear-family level. Their solutions

were not found to be practical over time and this direction in cultural evolution became dead end. At Sha'ar Hagolan, other solutions were practiced and were found efficient enough to be adopted by future generations. This interpretation places Sha'ar Hagolan on a direct trajectory with the full-blown urban centers of the fourth and third millennia BC in the Near East.

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Transforming the Upper Mesopotamian Landscape in the Late Neolithic

OLIVIER P. NIEUWENHUYSE AND PETER M.M.G. AKKERMANS

Abstract. The Late Neolithic period in Upper Mesopotamia is generally associated with a surge in human settlement, in terms of their number, geographic distribution, and organizational complexity. In archaeological discussion, the “advanced farming village” is often seen as the logical “end product” of the agricultural transformations that began in the Early (“Pre-Pottery”) Neolithic. However, the complex later prehistoric landscape did not emerge overnight. Current evidence suggests that this profound transformation took about one and a half millennia, and showed much localized variability. Over the past decades, regional surveys have resulted in a rich body of evidence that stimulates the exploration of long-term trends in settlement through the Neolithic period. Here we present a synthesis of this exploration. We highlight some important methodological and conceptual challenges to interpreting these data, and we point out a number of possible shifts in the ways Late Neolithic communities inhabited the landscape.

Keywords: Upper Mesopotamia, Late Neolithic, Halaf, Tell Sabi Abyad, Balikh Valley

The Late Neolithic in Upper Mesopotamia, known also as the “Pottery Neolithic,” was a transformative era that saw profound changes in subsistence, settlement organization, religious life, commensality, as well as the formation of local and supralocal identities. The term “Upper Mesopotamia” loosely refers to the area covered by the foothills of the southeastern Anatolian Taurus mountains, the inland parts of the northern Levant, the semi-arid steppes of the northern Syrian Jezirah, and the rolling plains of northern Iraq (fig. 1). The Late Neolithic began with the adoption of ceramics around 7000 cal. BC and came to an end with the shift from the Halaf to the Ubaid pottery style around 5300 cal. BC (Akkermans and Schwarz 2003; Campbell and Fletcher 2010; Karsgaard 2010; Tsuneki, Nieuwenhuyse, and Campbell 2017). Plain and coarsely made ceramics mostly characterize the first half of the period. However, the latter part was characterized by ceramic-technological diversification and a suite of elaborately decorated pottery styles, in what Jean-Luis Huot (1994: 63) termed “L’ère de la céramique peinte.” By facilitating new opportunities for symbolic messaging and social networking,

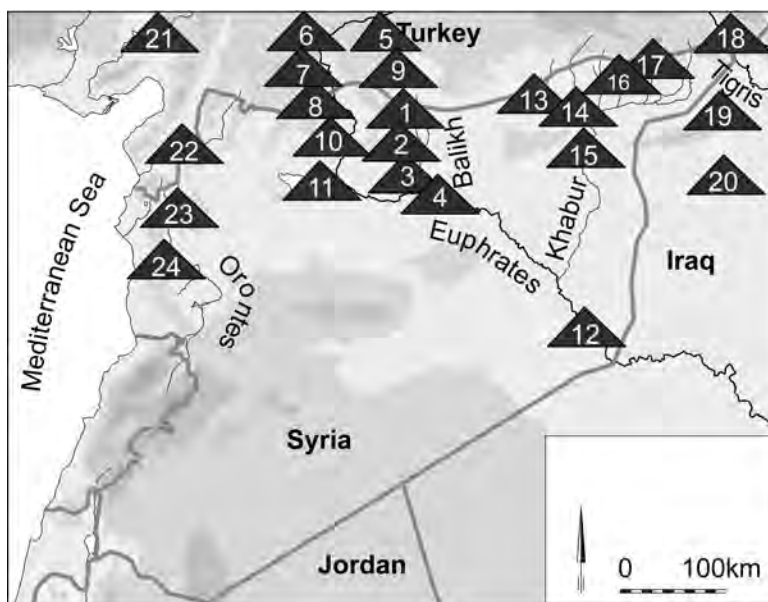


Fig. 1. Map of Upper Mesopotamia showing the locations of some major Late Neolithic sites. 1: Tell Sabi Abyad. 2: Khirbet es-Shenef. 3: Tell Mounbatah. 4: Tell Zaidan. 5: Kumartepe. 6: Fıstıklı Höyük. 7: Mezraa Teleilat. 8: Akarçay Höyük. 9: Tell Kazane. 10: Shams ed-Din. 11: Tell Halula. 12: Bouqras. 13: Tell Halaf. 14: Seker al-Aheimar. 15: Tell Boueid. 16: Chagar Bazar. 17: Nisibin. 18: Takane Hoyük. 19: Ginnig. 20: Umm Dabaghiyah. 21: Domuztepe. 22: Tell Kurdu. 23: Tell el-Kerkh. 24: Shir. (After Akkermans and Schwartz 2003: 3, fig. 1.1.)

advanced possibilities for bulk storage, and innovative ways for preparing food and drink, pottery containers were an important factor contributing to the success and longevity of the Late Neolithic way of life (Nieuwenhuyse 2018b, 2019, in press a, in press b; Redman 1978: 179).

As captured in the phrase “villages in the steppe” (Akkermans 1993), the steady spread of sedentary settlement formed an important element of this Late Neolithic transformation. The “advanced farming village” is often seen as the direct “end product” (Redman 1978: 176–77) of the agricultural transformations that began in the Early (“Pre-Pottery”) Neolithic. The Late Neolithic period is generally associated with an increasing number of archaeological sites. For Huot (1994: 67), in the course of the seventh millennium “*de petites communautés domestique ... se développent peu à peu sur l'ensemble du territoire mésopotamien.*” In the words of Charles Redman (1978: 178), at the end of the Late Neolithic period, “the agricultural village had established itself as the most effective economic strategy, allowing some communities to grow in large towns ... The distribution of farming villages and emerging towns had been extended far beyond the limits of the nuclear zone of the Near East....”

Yet, the mechanisms by which farming villages established themselves as the dominant form of socioeconomic organization across the Upper Mesopotamian landscape merit much further study (Akkermans 1993; Akkermans and Schwartz 2003). Since the 1980s, regional surveys have contributed much to changing our perspectives on Late Neolithic settlement (Wilkinson 2000). These studies enriched the archaeological narrative, and expanded upon the traditional, one-sided focus on isolated sites. They formed a fuller, ultimately more realistic consideration of the ways village communities interacted with, responded to, and affected the environments in which they found themselves. Surveys provide a unique perspective on site-location preferences, socioeconomic aspects of subsistence strategies, and site densities. These data can act as a (rough) proxy for demographic trends, and shed light on relationships between contemporaneous groups. Therefore, the Late Neolithic landscape is not a static background, but rather is the interplay between features of the natural environment and the choices made by prehistoric groups.

Recent surveys in Upper Mesopotamia have been innovative in their explicit focus on the Late Neolithic period as a research topic, in the adoption of chronological subdivisions within this period, and in their advocacy of transparent, more-rigorous analyses of the collected data (mostly pottery sherds). These new approaches offer opportunities to tease out change *during* this period and to identify regionally specific trends. At the same time, it has highlighted serious analytical and conceptual issues that have so far prevented a full consideration of Late Neolithic settlement. Such challenges call out for specially designed research projects targeting this period. Here we will discuss recent site surveys across the Upper Mesopotamian plains as a contribution towards a comparative, synthesizing perspective on the Late Neolithic landscape.

Archaeological Approaches to Late Neolithic Settlement

Until a few decades ago, the limited evidence at hand simply did not allow researchers to differentiate Late Neolithic settlement *within* this long period (almost two millennia). Initial surveys conducted in Upper Mesopotamia were rather unsystematic in detecting and sampling archaeological sites, and they rarely ever published specific information on the materials they collected (for example Mallowan 1936). Researchers at the time were interested in subjects other than the Late Neolithic period specifically. Even if the Late Neolithic was identified as a separate stage at all, its internal subphases were often lumped into a single block termed “Halaf” (among many others, Einwag 1993; Kühne 1977, 1978; Meijer 1986; Monchambert 1984). This stood in contrast to southern Mesopotamia, where surveying had developed into an important, analytically advanced tool much earlier. Through these methods, the earliest settlements in the lowlands

could be dated to the very end of the Late Neolithic period (Oates 1968, 2013; Pournelle 2017; Ur 2017). For those interested in the Sumerian Neolithic, there was not much to deconstruct.

Nor did the prevailing paradigmatic discourse stimulate any critical reflection on the prevailing notion of a unified, monolithic Late Neolithic. Adopting a long-term, systems perspective on human evolution, many scholars contrasted the Late Neolithic “package” as an undifferentiated analytical entity with what came before (the Pre-Pottery Neolithic), and what came afterwards (the Chalcolithic or Ubaid period; see Redman 1978). The Late Neolithic *system* mattered more than its internal variability. Others sought to identify broad-brush distinctions between northern and southern Mesopotamia. For example, Late Neolithic settlement across Upper Mesopotamia was seen as limited to areas where rain-fed agriculture was possible (Redman 1978: 188). This contrasted with site patterns left by the earliest settlers of the Mesopotamian lowlands, who assumedly already had made use of irrigation (Oates 1973). A static and essentialist perspective on the Late Neolithic prevailed.

Ismail Hijara was among the first to focus systematically on Late Neolithic settlement in northern Mesopotamia with a chronologically differentiated framework. He extensively reviewed the Halaf sites in Iraq documented by the Iraqi State Department (Directorate General of Antiquities Baghdad 1970, 1976). To this material, Hijara applied Mallowan’s classic tri-partite chronology, which derived from the excavations at Tell Arpachiyah (Mallowan and Rose 1935). Mallowan had distinguished between Early, Middle, and Late Halaf, to which Hijara added a Halaf-Ubaid Transitional (HUT) stage (Hijara 1997). Using his settlement data, Hijara (1997) was also able to identify important regional contrasts in site density and organization in the Halaf period. While Hijara was completing his *magnum opus*, several new survey projects had begun targeting the Upper Mesopotamian Late Neolithic. In northern Syria, the University of Amsterdam’s survey of the Balikh Valley was a ground-breaking and pioneering project (Akkermans 1993, 1999; Wilkinson 1996, 1998). The Northern Jazira Project soon followed this, investigating the steppe across the border with Iraq (Campbell 1992; Wilkinson 1990).

These pioneering projects were soon followed by several survey projects that investigated Late Neolithic settlement across the arid steppes of northern Syria and southeastern Turkey (Becker 2004, 2015; Kozbe 2013; Le Mièrre 2000; Lyonnet 2000; Nieuwenhuyse 2000; Nieuwenhuyse and Suleiman 2016; Nieuwenhuyse and Wilkinson 2008; Tekin 2017). Extensive surveys also targeted the Upper Mesopotamian Euphrates Valley. Several teams investigated this area over some decades and used different methodologies to identify and sample sites (Algaze, Breuninger, and Knudstad 1994; Algaze, Hammer, and Parker 2012; Geyer and Besançon 1997; Geyer and Monchambert 1987, 2003; Kohlmeyer

1984, 1986; Wilkinson, Peltenburg, and Wilkinson 2016). Walter Cruells has usefully brought together the available evidence for the Late Neolithic in the Syrian Euphrates Valley, applying periodizations derived from recent excavations in the region (Cruells, Molist, and Tunca 2004); Tekin (2017) has done similarly helpful work for the Turkish Upper Tigris Valley. A dedicated focus on Late Neolithic settlement patterns continues today in the mountainous Iraqi Kurdistan region (Altaweel et al. 2013; Gavagnin, Iamoni, and Palermo 2016; Morandi Bonacossi and Iamoni 2015; Nieuwenhuyse, Odaka, and Mühl 2016; Nieuwenhuyse, Akkermans et al. 2016; Saber et al. 2014; Tsuneki et al. 2015; Ur et al. 2013).

At present, these various projects have not settled on a uniform, mutually agreed-upon terminology for culture-historical periodizations or their ceramic indicators. However, they all attempt to isolate the Late Neolithic period as well as its complex subdivisions. They also place a sorely needed emphasis on more-rigorous analytical procedures for studying and publishing the collected surface materials, namely, the ceramics. This is crucial to validate the chronological attributions and allows for closer peer scrutiny (Ur 2010). For the first time, these projects allow researchers to identify changes in the use of the landscape *during* the Late Neolithic, and can take into account variability in geography, demographics, and subsistence.

It is important to emphasize that these new, targeted surveys did not focus on the Late Neolithic period only because their analytical research questions stimulated them to do so. Rather, a growing number of new excavations guided these research questions, which were stimulated by the establishment of clear, radiocarbon-dated chronological frameworks for the period (Akkermans 2014; Campbell 2017; Cruells 2017; Cruells, Faura, and Molist 2017; van der Plicht et al. 2011). This facilitated the fine-tuning of the available culture-historical frameworks and the identification of several well-dated, but short-lived ceramic horizons (Akkermans 1989, 1993; Bernbeck and Nieuwenhuyse 2013; Campbell 1992; Cruells 2017). In combination with advances in survey methodologies and interpretation (Ur 2010; Wilkinson 2000), these factors made the study of the Late Neolithic landscape conceptually more interesting and methodologically more feasible. Indeed, they provided an almost irresistible research goal for Upper Mesopotamian prehistorians.

Therefore, it would appear that settlement patterns across the area should be quite well known. At the same time, however, scholars have become much more critical in their assessment of the analytical potential of prehistoric survey data. A far from exhaustive list includes the following theoretical and methodological issues. First, interpretations of the Late Neolithic landscape rely on an established framework of the prehistoric ceramic evidence. Notwithstanding recent progress, much important work lies ahead, as the ceramic-technological background of key pottery types remains obscure in many cases. It is very difficult to classify

fragmented surface material using traditional culture-historical frameworks, which are based primarily on the art-historical analysis of shape and the decoration of complete vessels (Nieuwenhuyse 2000). Useful innovative approaches include the “Working Typology” first developed by Tony Wilkinson and expanded by Jason Ur (Ur 2010: appendix B, Wilkinson 2000), which identifies periods on the basis of ceramic traits that have at least some degree of scholarly consensus. A crucial aspect of future survey periodizations should be the attempt to anchor them within locally well-documented sequences (Akkermans 1993).

Further, Late Neolithic sites appear to be considerably less visible than those from other periods. Late Neolithic sherd densities typically rank as very low, posing pertinent questions of site definition and site formation (Nieuwenhuyse and Wilkinson 2008: 274–76; Ur 2010: 59, 93–95). Significant erosion and sedimentation during the Holocene has transformed much of the earlier landscape, potentially burying small Late Neolithic sites or even destroying them entirely. As an example, site densities in the Syrian Euphrates Valley rank suspiciously lower than those observed in other parts of the region. Peter Akkermans (1999: 526–27) has attributed this to the application of survey procedures insufficiently sensitive to small, inconspicuous prehistoric sites or to strong Holocene erosion and sedimentation characterizing the river valley; a combination of those factors is also likely. Another example comes from western Syria, where intensive surveying failed to identify Late Neolithic sites. Local farmers bulldozing part of the Sarut River terrace in order to level the field for agriculture uncovered the large seventh-millennium site of Shir (Bartl and Haidar 2008; Bartl, Farzat, and al-Hafian 2012). The adoption of systematic surveying techniques has certainly had a positive impact on the study of later prehistoric settlement, but further refinement is still needed. For example, a stronger emphasis on field walking designed to detect small, inconspicuous sites typical for the period holds great promise (Gavagnin, Iamoni, and Palermo 2016; Niknami, Nikzad, and Alibaigi 2013; Nishiaki 2000).

Scholars attempting to apply fine-tuned chronological schemes derived from stratified excavations to the thinly scattered, highly fragmented surface material that is typical for the Late Neolithic period risk the utter fragmentation of their data. In an insightful critique of Late Neolithic settlement studies, Stuart Campbell (1992) proposed a somewhat simplified chronology for the Halaf period, which several projects subsequently followed (Becker 2015; Kozbe 2013; Nieuwenhuyse 2000). Jason Ur (2010) also has adopted a scheme that is less differentiated than stratified sequences would allow, dividing the Late Neolithic into two main periods called “proto-Hassuna” (Period 1), and “Halaf” (Period 2). With its generous chronological resolution, several survey projects in Iraqi Kurdistan have adopted Ur’s solution. Figure 2 shows the more detailed temporal boundaries used in the present article. Based on key changes in the pottery, this scheme

Table 1. Provisional Late Neolithic chronology for Upper Mesopotamia, outlining broad ceramic developments. (After Bernbeck and Nieuwenhuyse 2013, table 1.1.)

14C	Archaeological periods	Broad ceramic characteristics
5300–5100	Halaf-Ubaid Transition (HUT)	Gradual demise of painted Fine Ware ceramics; general consensus on a gradual transition yet very poorly understood.
5900–5300	Halaf I –Halaf II	Ceramic assemblages dominated by painted Fine Ware ceramics; strong stylistic similarities over large distances, yet also increasing evidence for localized practices in production and consumption; various chronological subdivisions certainly possible yet poorly understood.
6100–5900	Hassuna/Samarra (northern Iraq); proto-Halaf (northeastern Syria); Transitional (Balikh); Mezraa IIB (Turkish Euphrates); Halula IV (Syrian Euphrates)	The ascendance of various painted Fine Wares; coalescing stylistic horizons in the painted Fine Wares, yet localized practices in production and consumption.
6250–6100	archaic Hassuna (northern Iraq); proto-Hassuna (northeastern Syria); pre-Halaf (Balikh); Mezraa IIA (Turkish Euphrates); Halula III (Syrian Euphrates); Rouj 2D (Northern Levant); Transitional (Domuz)	Ascendance of decorated ceramics; increase range of uses for pottery vessels; gradual disappearance of White Ware.
6700–6250	proto-Hassuna (northern Iraq, northeastern Syria); Early Pottery Neolithic (Balikh); Halula II (Syrian Euphrates); Mezraa IIC/Akarçay II (Turkish Euphrates); Rouj 2b–c, Shir I–VI (Northern Levant); Ceramic Neolithic (Domuz).	Pottery becomes firmly establish; diversification and increase of range of uses for ceramic vessels; emergence of plant-tempered pottery; emphasis on plain pottery vessels; local variation but emerging similarities; stone vessels and White Ware in addition to pottery.
7000–6700	pre-proto-Hassuna (Khabur, northern Iraq); Initial Pottery Neolithic (Balikh); Transitional (Turkish Euphrates); Halula I (Syrian Euphrates); Rouj 2a (northern Levant)	Introduction of ceramic containers; pottery vessels few in number and (presumably) limited to a restricted set of uses; emphasis on pottery with a mineral temper; significant regional variation but also emerging supralocal groupings; stone vessels and White Ware in addition to pottery.

identifies shifts in the quantities of pots in daily use, in the composition of the ceramic assemblage, and in the amounts and types of decorated pots (summarized in table 1).

Crucially, site distribution data on its own is hardly sufficient to reflect the complexities of Late Neolithic settlement. Ideally, this information should be integrated in a rich narrative that also includes in-depth, multidisciplinary studies of excavated settlements. For the later seventh and sixth millennium (the pre-Halaf and Halaf stages), we have reasonably secure information regarding village lay out, subsistence, as well as ritual and social organization (see the contributions in Nieuwenhuyse et al. 2013). However, for the earlier parts of the seventh millennium (the Initial Pottery Neolithic and Early Pottery Neolithic stages), the available information remains much more fragmented. Most of the recent excavations need more time to be fully published and digested.

At the Adoption of Pottery in the Initial Pottery Neolithic, ca. 7000–6700 BC

Interestingly, the introduction of pottery for making durable, portable containers in Mesopotamia around ca. 7000 cal. BC—the start of the Late Neolithic—may or may not have been associated with an abrupt change in settlement densities and site locations. To a large extent, this association depends on the definition of what constitutes a “Late Neolithic” site, and on the interpretation of exactly how, when, and why pottery containers became adopted across Upper Mesopotamia. These issues continue to invite considerable debate (Le Mièrre and Picon 1999; Nieuwenhuyse and Campbell 2017; Tsuneki 2017).

Recent studies have demonstrated that the earliest ceramic horizon in Upper Mesopotamia (here called the Initial Pottery Neolithic, ca. 7000 to 6700 cal. BC) was characterized by very low quantities of fragile and mineral-tempered ceramics (Le Mièrre 2017; Le Mièrre, Merle, and Picon 2018; Nieuwenhuyse, Akkermans, and van der Plicht 2010; Odaka 2017; Cruells 2017; Cruells, Faura, and Molist 2017; Tsuneki et al. 2017). These properties make it incredibly difficult to detect Initial Pottery Neolithic sites in regional surveys. Indeed, the few examples known so far all constitute *excavated* sites, where the rare, fragmented pottery sherds could be collected from stratified contexts. These sites all fall within major and perennial water courses in the northern parts of the Euphrates, Balikh, and Khabur Valleys, as well as in the northern Levant (Le Mièrre 2017; Le Mièrre, Merle, and Picon 2018). The semi-arid steppes between these valleys have not yielded any Initial Pottery Neolithic sites at present.

The Balikh Valley arguably ranks among the most thoroughly surveyed pre-historic landscapes in the wider region. If one took the ceramic evidence as a direct reflection of the spread of early Pottery Neolithic populations, a flourish-

ing PPNB society witnessed an abrupt abandonment of almost the entire valley during the Initial Pottery Neolithic phase. In this period, settlement “contracted” to the northern parts of the valley (Akkermans 1993: 170–72, 1999; Akkermans and Schwartz 2003: 110–11). This was followed by a partial return of the population during the Early Pottery Neolithic (scenario #1). Just four Initial Pottery Neolithic sites are known (fig. 2). Most Late Neolithic sites are located north of the present-day 220 mm isohyet, suggesting climatic factors affected these demographic fluctuations and settlement preferences. In short, this scenario envisions dramatic demographic upheavals around the time that people adopted pottery. Akkermans has pointed out the intriguing parallels with contemporaneous site abandonment in the southern Levant, the so-called *hiatus palestinien* (Akkermans and Schwartz 2003: 110–11).

Alternatively, the adoption of pottery containers and the subsequent integration of the new craft in society may have played out differently across different PPNB communities (scenario #2). In the Balikh Valley, the new and exotic containers are known to be of a nonlocal origin (Le Mièrre, Merle, and Picon 2018). Also at Shir, in the northern Levant, the earliest ceramics at the site may have been imported from elsewhere (Nieuwenhuys 2009a). Through networks of exchange, their mobility may have carried connotations of prestige and ritual (Nieuwenhuys et al. 2010). Local communities likely differed in the degree to which they could (or wanted to) participate in the social, economic, and ritual networks through which these containers traveled.

In the Balikh Valley, slips or red-painted motifs on a light-colored background frequently decorated the early pottery. In the northern Levant, the earliest ceramics were dark colored and burnished, perhaps emulating polished stone vessels (Le Mièrre, Özbaşaran, and Picon 2017). The visually conspicuous, small, and open containers may have had ritualized uses; they were available only in tantalizingly small numbers. At this stage, the more utilitarian roles of pottery in facilitating bulk storage, or a sustained shift to cooked food were not (yet) relevant drivers of consumption (Nieuwenhuys and Campbell 2017; Tsuneki 2017). The practices that these small and delicate containers facilitated may not have been important to each and every Neolithic community. Some may even have consciously rejected the novelty and the practices associated with these new objects (Bernbeck 2010, 2017). At the Neolithic village of Bouqras on the Syrian Euphrates, it is significant to note that pottery was not adopted before the later part of the seventh millennium (Akkermans et al. 1983).

If the partial adoption of pottery containers is accepted as a possible factor, then the limited spread of Initial Pottery Neolithic sites could indicate that only some of the communities in the northern parts of Upper Mesopotamia gained access to these early ceramic containers. In this scenario (scenario #2), practices involving the use of ceramic containers did not spread much further south during

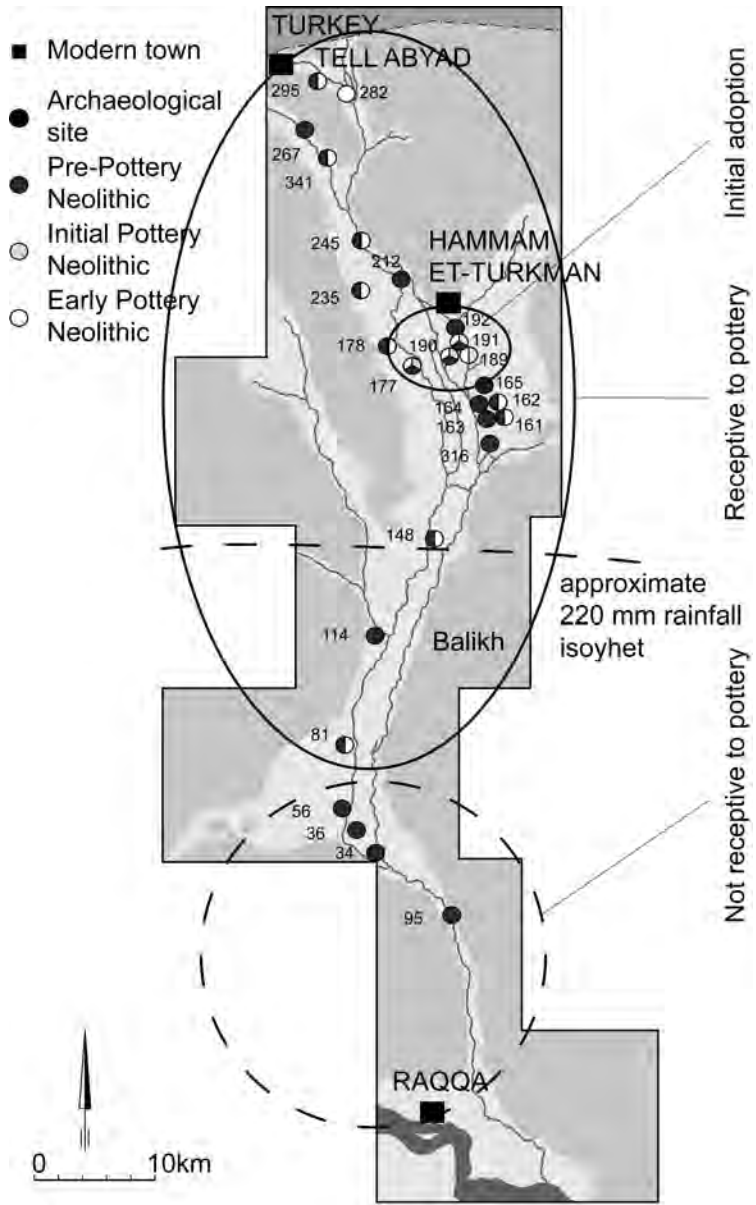


Fig. 2. The distribution of Pre-Pottery Neolithic, Initial Pottery Neolithic, and Early Pottery Neolithic sites in the Balikh Valley. Initial Pottery Neolithic sites: No. 177, Tell Damishliyya; No. 189, Tell Sabi Abyad I; No. 190, Tell Sabi Abyad II; No. 191, Tell Sabi Abyad III. Other sites: No. 245, Tell Assouad; No. 148, Tell Mounbatah. After Nieuwenhuyse 2018: pl. 31.

the initial stage of the Late Neolithic. In the Balikh, the potter's craft appears to have spread gradually over several centuries, when Late Neolithic communities across the valley began to produce coarse undecorated pottery locally during the Early Pottery Neolithic phase (fig. 2). Even then, ceramics may not have reached each and every village. Neolithic sites in the southern part of the Valley have so far not yielded ceramics from this early period. Either these sites were abandoned around 7000 BC (after the PPNB period; scenario #1), or these Neolithic groups maintained an aceramic life long after the availability of pottery (scenario #2). In the latter scenario, notwithstanding the fairly dramatic and recent developments in pottery typology, settlement patterns may have been relatively stable.

In the Balikh, it is still difficult at present to establish the extent of the settlements at the few Initial Pottery Neolithic sites known. However, there is reason to believe that it was quite limited, with free-standing buildings comprising only a small portion of the low mounds. This left large areas open for waste disposal and the construction of fireplaces. The area of occupations at each site may have covered around 0.25 to 0.5 ha, suggesting that the local population comprised small and dispersed groups (Akkermans 2013a). In this respect, the early seventh-millennium sites in the region were barely different from those of the preceding PPNB period. In addition to the limited size, the characteristic "pairing" of sites, with two, sometimes three dispersed sites clustering in favorable locations, formed another link with the PPNB (Akkermans 1993).

Settlement continuity is observed in the architecture as well, such as at the mounds at Tell Sabi Abyad. Characteristic were free-standing, rectilinear buildings up to 10×7 m in extent, that were distinctly tripartite in layout. Each rectangular building comprised a relatively wide central hall flanked by parallel rows of narrow but long-drawn rooms along each of the long sides, usually with a smaller cubicle at the rear end (Akkermans 2013b; Akkermans and Brüning in press). Usually, the buildings were filled in to change them into "platforms" on which the subsequent building was reconstructed in almost identical manner and layout (fig. 3). This resulted in alternating building–platform–building sequences that grew upwards over several human generations (Akkermans, Brüning, and Kaneda 2011). Significantly, some of these sequences at Tell Sabi Abyad continued through the crucial Early Neolithic (or PPNB) to Late Neolithic (or Pottery Neolithic) threshold without interruption.

Settlement in the Early Pottery Neolithic, ca. 6700–6250 BC

Across Upper Mesopotamia and the northern Levant, the initial stage of the Late Neolithic was followed by several centuries characterized by coarsely made, plant-tempered wares. Following the nomenclature adopted at the site of Tell Sabi Abyad, where this period has been studied in greatest detail, this paper adopts the

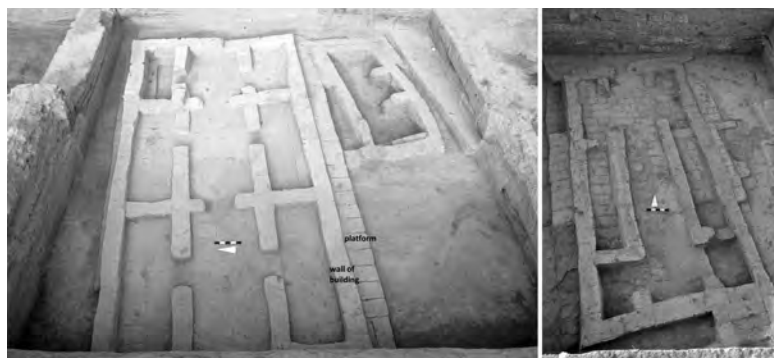


Fig. 3. Tell Sabi Abyad III. Examples of final PPNB to Initial Pottery Neolithic tripartite buildings erected on platforms. Left: A tripartite building dated to ca. 6900 BC. The platform below the building is clearly visible along the edges of the structure. Right: A tripartite building with long-drawn but narrow rooms, set on a platform, dated to ca. 7000 BC. The entrance to the building is on the short side from the north. ((Photographs by Peter Akkermans; courtesy of the Tell Sabi Abyad Archive.)

term Early Pottery Neolithic (EPN) period (Akkermans et al. 2006). At Tell Sabi Abyad, the EPN lasted from about 6700 to 6250 BC (Bernbeck and Nieuwenhuyse 2013: fig. 1.4; van der Plicht et al. 2011). The archaeology of this period in Upper Mesopotamia was still almost entirely unknown until about a decade ago (Le Mière and Picon 1999). Significant advances have occurred in the intervening time, but much of our knowledge remains limited to preliminary publications fresh from the field. The Upper Mesopotamian seventh millennium represents an exciting research frontier with immense interpretative potential.

This era was crucially transformative, as it saw the full uptake of containers made of pottery. Perhaps most importantly for this period, the quantity of pottery containers increased very significantly, albeit gradually, over several centuries. At the start of this phase, sherd densities typically were as low as those of stone vessels, yet by the end of the period ceramic sherds became the most numerous find during excavations (Nieuwenhuyse 2018b, 2019). Alongside this expansion, the craft changed qualitatively. Potters gradually improved their ceramic-technological expertise, developing the ware commonly known among archaeologists as “Coarse Ware.” The potters increasingly tempered this with coarse vegetal fibres to allow the construction of containers of unprecedented size, volume, and weight. Such vessels now were produced in increasing amounts (fig. 4, top). The “jar” as a formal type, with a closed shape and carrying a distinct neck did not yet exist. Nevertheless, the increasing capacities of the pottery containers and the frequent application of plasters for reducing their porosity suggest that pots were increasingly adapted to bulk storage (Nieuwenhuyse 2018b).



Fig. 4. Seventh-millennium ceramic containers from Tell Sabi Abyad. Top: mid-seventh millennium (Early Pottery Neolithic period). Bottom: later seventh millennium (pre-Halaf period). (Photographs courtesy of the Tell Sabi Abyad Archive.)

The ubiquitous availability of strong, durable, yet movable pottery containers must have had far-reaching repercussions for subsistence and sociopolitical organization. However, we are still a long way from understanding the complex entanglements of humans and their material world in Upper Mesopotamia in the seventh millennium (Nieuwenhuyse in press, a, in press b). Pottery containers likely facilitated the collection of surpluses over longer stretches of time as

well as their strategic manipulation for social and political purposes. The spatial organization of the village changed over time, with large pottery containers increasingly set up inside and around the houses. The increased availability of pottery may have played a role in a trend towards subsistence “privatization” that some scholars have argued took place in the later Neolithic (Flannery 2002). It is probably not without significance that the practice of seals and applying seals was widely introduced at the end of this stage: another sign indicating privatization and the increasing role of personal property (Akkermans and Duistermaat 1997; Duistermaat 2013).

The breakthrough of creating strong, durable pottery containers comes as good news for modern surveyors, as it makes sites from this period much more visible. Indeed, settlements attributed to this period at first sight are more numerous than before. Several EPN sites have been excavated at present, most notably at Tell Sabi Abyad, Tell Halula, Mezraa Teleilat, Akarçay Höyük, Seker al-Aheimar, Ginnig, Tell el-Kerkh, and Shir (fig. 1). This is a welcome collection of evidence to draw upon, even if the evidence published so far often remains limited to documenting stratified ceramic sequences. Surveys in the northern Levant and along the course of the Euphrates River have yielded suspiciously few sites. Yet, geomorphological factors in these areas may be especially guilty of hiding or removing sites altogether (Akkermans 1999; Bartl and Haidar 2008).

However, it is interesting to note that the semi-arid steppes between the rivers have not produced any EPN sites so far (Becker 2015; Einwag 1993). On the northern Iraqi plain, only one site dates to this period, namely, the site of Ginnig (Campbell 1992: 114; Campbell and Baird 1990). The absence of sites is intriguing given the abundant presence of EPN sites in the Balikh Valley and, to a lesser extent, in the headwaters of the Upper Khabur. It is even more puzzling if one considers the abundant pottery (hence, site visibility) characterizing at least the final stages of the period. In the steppes, the effects of erosion and sedimentation would be less significant than in the river basins. Admittedly, modern economic development of this rural landscape may well have obliterated many small and inconspicuous prehistoric sites. It seems unlikely, however, that surveys on the Upper Mesopotamian steppes would have missed EPN evidence entirely, had it been there. This perhaps suggests that groups carrying EPN material culture had distinct site location preferences close to perennial water sources.

In this respect, the best-studied region so far is the Balikh Valley, where there are many EPN sites (fig. 2). Following the discussion of the Initial Pottery Neolithic above, various interpretations are possible for this pattern. Following one reading of the evidence, the spread of pottery accurately reflects populations and settlement inhabitation. The corresponding pattern would suggest a partial return of settlement in the valley after the “collapse” following the PPNB (Akkermans 1993). EPN groups situated their villages mostly in the northern, rain-fed

part of the valley, close to the river. With few exceptions, communities returned to much older locations, which their ancestors had already inhabited during the PPNB (fig. 2). In an alternative interpretation, one might envisage the progressive spreading of pottery during the EPN. Perhaps after a few pioneering Neolithic groups had adopted the new craft during the Initial Pottery Neolithic, several more communities in the Balikh in this subsequent stage were receptive as the craft crept south. Evidently, the two scenarios propose different conclusions regarding cultural and demographic continuity in the valley. At the well-researched site of Tell Sabi Abyad, settlement continuity is attested from the PPNB through the IPN, and into the EPN (Akkermans et al. 2006).

The Early Pottery Neolithic may have lasted for about half a millennium. The internal subdivisions of the Early Pottery Neolithic do not (yet) allow for a chronologically more fine-tuned settlement differentiation. This makes it difficult to assess the speed with which the potters' craft (or, alternatively, demographic expansion) advanced across the region. Significantly, pottery does not appear to have reached the Balikh-Euphrates confluence even at this advanced stage. It is perhaps most likely that sedentary groups did not permanently settle the southern part of the Balikh Valley. However, it cannot be excluded entirely that it was inhabited at this stage by groups still rejecting pottery (fig. 2). After all, much farther to the south along the Syrian Euphrates, the village of Tell Bouqras was still thriving without pottery; the earliest pottery from this site dates to the late seventh millennium BC (Akkermans et al. 1983). Sites in the Syrian interior, too, may have adopted ceramics much later (Akkermans and Schwartz 2003: 120–26).

Most Balikh sites dated to the EPN are small, measuring no more than a few hectares at the most. Significantly, *settlement* at these sites appears to have been even more restricted, often comprising only a small portion of each mound, leaving large open and unused areas. At Tell Sabi Abyad, the occupations dated between about 6450 and 6250 BC were only between 0.1 and 0.2 ha in extent, although the site as a whole probably had several contemporaneous but spatially dispersed communities. Community segmentation, it appears, was a central characteristic of Late Neolithic society in Upper Mesopotamia. All in all, late seventh-millennium settlement at Tell Sabi Abyad may have comprised perhaps 0.5 ha, distributed over a site covering 2 ha (fig. 5). The number of people living and working at these sites must have been very limited. Akkermans (1993: 172) has estimated the total population for the Balikh Valley in the EPN period at no more than roughly 350 to 650 individuals.

It appears also that the use-life of most EPN occupations was brief, lasting only two or three decades, or within the span of a single generation. The overall brevity of settlement is emphasized when taking into account that each of these twenty- to thirty-year phases comprised the entire cycle of local habitation: from



Fig. 5. View of the extensive excavations at Tell Sabi Abyad I, with house remains radiocarbon-dated to 6365–6335 BC, the final stage of the Early Pottery Neolithic period. (Photograph by Peter Akkermans; courtesy of the Tell Sabi Abyad Archive.)

its foundation and daily use, to its final abandonment, and lying empty for a sometimes prolonged span of time (Akkermans 2013a).

Spreading Out across the Steppe in the Pre-Halaf to Early Halaf, ca. 6250–5700 BC

Recent work has shown that the later seventh millennium was a period of profound cultural transformation (Akkermans et al. 2006; Akkermans 2013b; Nieuwenhuyse et al. 2016c; Nieuwenhuyse in press, a, in press b). How did this affect the Late Neolithic landscape? If one were to limit the discussion to the major river systems, the available evidence would suggest a reduction in sedentary settlement in the later seventh millennium, followed by a slow increase in the early sixth millennium BC. Rapid changes in the styles of decorated pottery are a hallmark of this period, allowing archaeologists to distinguish shorter time slices. In the valleys of the Euphrates, the Upper Tigris, the Balikh, and the Upper Khabur, sites dated to the pre-Halaf, Transitional, and Early Halaf (Halaf I) stages are relatively scarce. They are all situated in the northern parts of their respective valleys (Akkermans 1993: 172–79, figs. 5.3 to 5.5; Cruells, Molist, and Tunca 2004; Kozbe 2013; Nieuwenhuyse 2000; Nieuwenhuyse and Wilkinson 2008; Tekin 2017). Sites were mostly very small, not surpassing 1 or 2 ha in size; the occasional “central” sites reached a little more than 3.5 ha in size (Akkermans 1993: 191–203).

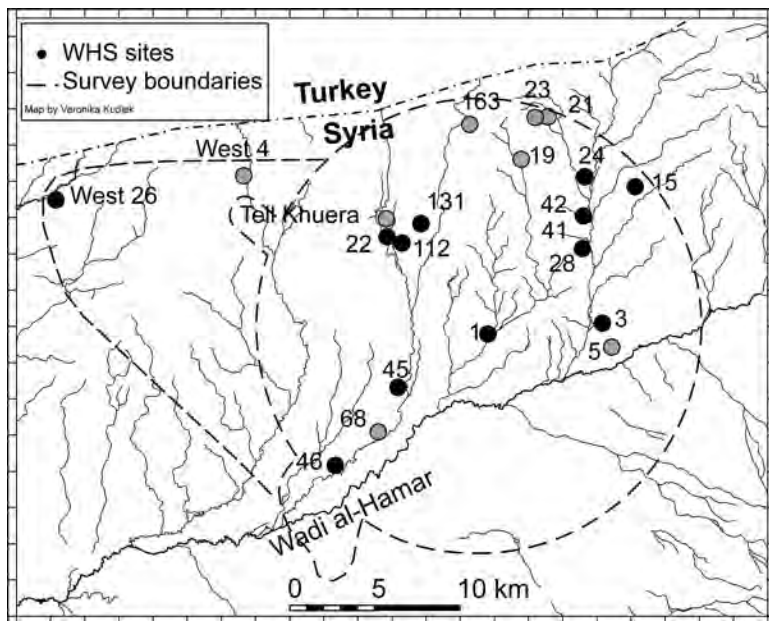


Fig. 6. Late Neolithic site distribution in the Wadi Hamar survey in northern Syria. Gray dots: sites dated to the Halaf I period. (From Becker 2015: Abb. 105; map prepared by Veronika Kudlek; courtesy of Jörg Becker.)

In these aspects, settlement within the valleys resembled that of the preceding, Early Pottery Neolithic.

However, if researchers broaden their geographic gaze to include the steppes *between* the major rivers and their tributaries, it becomes clear that an important change in settlement dynamics marked the turn from the seventh to the early sixth millennium. Intensive surveying of the Wadi Hamar region, situated between the Balikh and Khabur water courses, did not yield a single site dated to the seventh millennium or earlier (Becker 2015). The earliest sites in this region date to the early sixth millennium BC or Early Halaf phase (Becker 2015: 264, abb. 119). Low numbers of small-sized settlements characterize the Early Halaf period in the Wadi Hamar region (fig. 6). In the early sixth millennium, with the onset of the Halaf, settlement expanded as some communities fanned out into the steppe.

How did the small Late Neolithic communities survive this challenging landscape, and even flourish? We are much better informed regarding the constitution of these pre-Halaf to Early Halaf societies than about their seventh-millennium predecessors. The spread of settlement into the steppes formed part of a complex package of economic, social, and ritual changes that profoundly transformed Neolithic societies (Akkermans 1993; Akkermans et al. 2006; Akkermans

and Le Mière 1992; Akkermans and Verhoeven 1995; Akkermans and Duistermaat 1997; Nieuwenhuyse et al. 2016c; Russell 2010). Among other things, these changes include the full adoption of administrative systems involving stamp seals and abstract “tokens,” the full domestication of aurochs, and, an intensified reliance on secondary products (Cavallo 2000; Rooijakkers 2012; Russell 2010). Significantly, the earliest known attestations of dairy residue in pottery vessels from ancient Mesopotamia date to this period (Evershed et al. 2008; Nieuwenhuyse et al. 2015).

Innovations in pottery containers contributed crucially to the success of these innovations, as pottery vessels became indispensable tools for cooking, storage and symbolic networking. Upper Mesopotamian communities in the later seventh to early sixth millennium introduced a range of mineral-tempered, burnished cooking wares (Le Mière and Picon 1991). Some of these appear to have facilitated dairy processing (Nieuwenhuyse et al. 2015). Excavated villages dated to the pre-Halaf and Early Halaf periods typically contain large numbers of pottery containers for bulk storage that come in a broad range of shapes and sizes (fig. 4, bottom). At Shir, Tell Sabi Abyad, and other later seventh millennium sites ceramic analyses show in detail how the formal type of “jar” emerged gradually out of earlier, predecessor vessels that still lacked distinct necks (Bader and Le Mière 2013; Nieuwenhuyse 2018b, 2019).

Finally, from the pre-Halaf period onwards, decoration adorned pottery containers. A broad range of decorative techniques and styles characterized Upper Mesopotamia, until these coalesced in the elaborated painted pottery style known to archaeologists as the Halaf ceramic tradition (Nieuwenhuyse 2007, 2013). Painted serving vessels became important props in symbolically charged commensality events: the “painted-pottery revolution” (Nieuwenhuyse 2009b) had begun. The adoption of pottery expressed social identities and it indicates intense social networking over vast distances (LeBlanc and Watson 1973). Archaeologists observe this interaction in rapid stylistic changes to the decorated ceramics that are surprisingly similar over large distances.

The role of the village changed accordingly (Akkermans et al. 2006). By the later seventh millennium, villages across the Upper Mesopotamian landscape emerged as focal points in a more mobile, semipastoralist economy (Akkermans and Verhoeven 1995; Verhoeven 1999). Characteristic were large, rectilinear “multiroomed buildings” that appear to have been used as collective store rooms for parts of the population not permanently residing within the village (Akkermans and Duistermaat 1997; Akkermans and Schwartz 2003; Duistermaat 2013; Verhoeven 1999). The exact shape and size of these buildings differed from place to place. At Tell Sabi Abyad, an extensive conflagration preserved several of these buildings remarkably well in the so-called “Burnt Village” (fig. 7; Akkermans and Verhoeven 1995; Akkermans 2014; Akkermans et al. 2012; Akkermans and

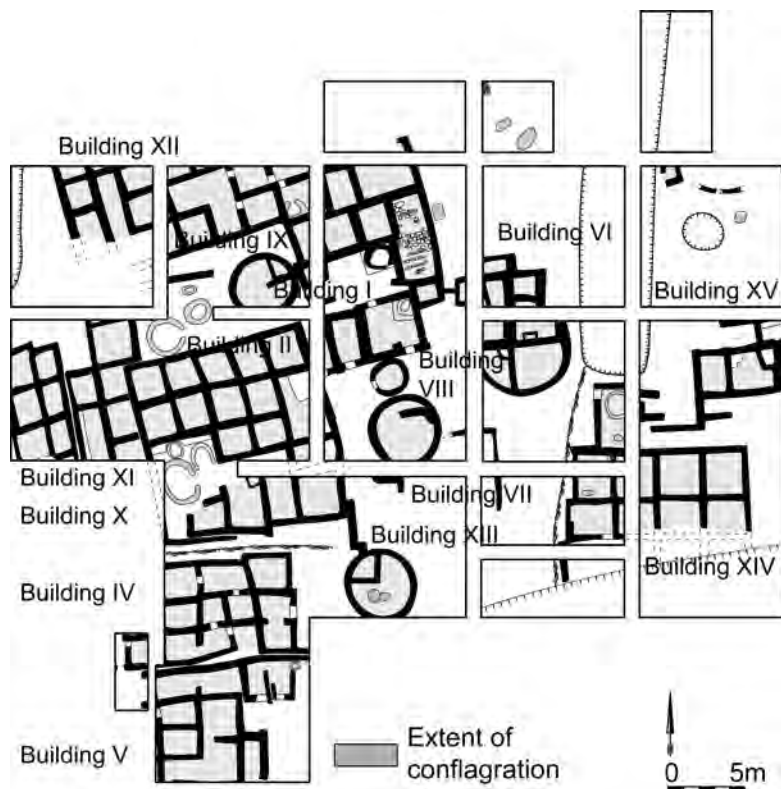


Fig. 7. Tell Sabi Abyad I, “Transitional” / “proto-Halaf” period. Plan of the so-called “Burnt Village” (Operation I, level 6). (From Akkermans 2014: 69, fig. 2.29; courtesy of the Tell Sabi Abyad Archive.)

Le Mière 1992). Similar buildings have been excavated at sites like Umm Dabbaghiya (Kirkbride 1975), Bouqras (Akkermans et al. 1983), and Tell “Ain el-Kerkh (Tsuneki et al. 2000). A remarkable multiroomed and collective building at Shir contained several huge pottery containers in situ (Bartl in press; Bartl and al-Hafian 2014). Smaller varieties of possible storehouses occur at the smallest, short-lived settlements as well, for example at Tell Boueid II (Nieuwenhuys and Suleiman 2016), Fıstıklı Höyük (Pollock 2013), and Khirbet esh-Shenef (Akkermans 1993).

Characteristic of the many villages was their remarkably short-lived and highly mobile nature (Akkermans 1993, 2013a; Pollock 2013). Characteristic for Upper Mesopotamian settlement throughout the Halaf period, people moved around the landscape dynamically, founding new settlements, relocating to others, and abandoning them easily (Akkermans and Schwarz 2003: 150–53; Akkermans 2013a; Bernbeck 2013). Some scholars have attributed the extraordinary

geographic spread of the Halaf cultural tradition to precisely this propensity of Halaf communities to fragment so easily and start new settlements elsewhere (Breniquet 1996; Forest 1996). Residential flexibility made the best of a challenging landscape. These communities were flexible also in their subsistence methods. A considerable diversity characterizes the economic base of these steppe outposts. Some relied on a combination of agriculture and herding, but others seem to have relied heavily on hunting (Akkermans and Schwartz 2003). At some sites, wells have been documented (Campbell and Healey 2012; Wilkinson 1990).

At first glance, this whole package of change appears to synchronize well with the so-called 8.2 ka abrupt climate event. This has led to a lively debate on the possible causal role of climate change (Bar Yosef in this volume). Initially, scholars hypothesized that this short-lived climate anomaly only had disastrous repercussions on Neolithic communities that inhabited the already-marginal landscapes of Upper Mesopotamia (Staubwasser and Weiss 2006; Weninger et al. 2006). As empirical data regarding the life ways of Late Neolithic communities before, during, and after the event became more available, this grim view developed into a more nuanced perspective. There seemed to be evidence of rapid cultural change and adaptation rather than direct collapse (Akkermans, van der Plicht et al. 2010, 2015; Düring 2016; Flohr et al. 2016; Mottram 2016; Nieuwenhuyse et al. 2016c; Willet et al. 2016). Tell Sabi Abyad is one of the key sites for which scholars have repeatedly sought to demonstrate “abandonment” during the 8.2 ka climate upheavals (Bar Yosef in this volume). However, the strong evidence for settlement continuity at this site flatly contradicts this interpretation (Akkermans 2014).

Many of the cultural transformations observed in the archaeological record for the later seventh to early sixth millennium BC can be interpreted as adapting to climatic stresses (Mottram 2016). However, a closer look at the emerging data suggests a more complex picture. At Tell Sabi Abyad, several key “adaptations” may in fact trace their roots to stratigraphic levels *preceding* those synchronizing with the climate event. For example, the development of ceramic bulk storage containers was an innovation that gave a significant benefit in times of enhanced aridity; this container’s development occurred long before the 8.2 ka climate event (Nieuwenhuyse 2019, 2018b). Rather than *causing* these cultural changes, the climate anomaly appears to have accelerated already existing trends that were entirely unrelated to climate change (Nieuwenhuyse et al. 2016c).

Site Expansion and Differentiation in the Later Halaf, ca. 5700–5300 BC

The development of settlement certainly did not stop after the Early Halaf period. Archaeologists have identified important changes taking place in the Middle-

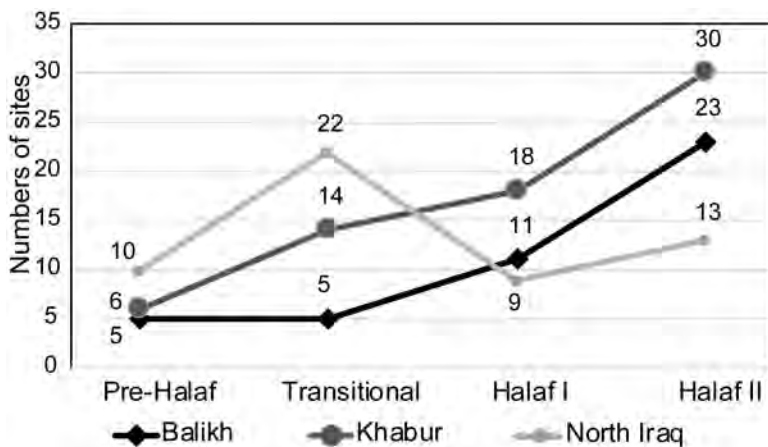


Fig. 8. Numbers of sites from the pre-Halaf (proto-Hassuna) through the Transitional (proto-Halaf) and Halaf I (Early Halaf) periods into the Halaf II (Middle-Late Halaf) period in three surveys in Upper Mesopotamia. (Data retrieved from Akkermans 1993; Campbell 1992; Nieuwenhuyse 2000.)

Late Halaf stage (or Halaf II). These include a surge in the quantity, geographic expansion, and increased organizational complexity of sites. These trends at end of the Halaf period already may have laid the foundations for the settlement organization of the succeeding Ubaid period (Trentin 2010). However, considerable regional differentiation may have existed and much uncertainty remains about the link between these two periods.

Across the Upper Mesopotamian steppes, surveys attest to increasing numbers of sites dated to the Middle-Late Halaf period (fig. 8). The quantity of sites doubled both in the Balikh Valley and in the headwaters of the Upper Khabur (Akkermans 1993; Nieuwenhuyse 2000; Nieuwenhuyse and Wilkinson 2008). Figures for the total area inhabited increased as well during the Halaf II in both of these areas. Nevertheless, these statistics should be treated with due caution because many of the Halaf II sites belong to the category of small, short-lived settlements typical for the period. As a result, the high site numbers may not reflect the actual situation; they almost certainly mask frequent relocation during the period (Akkermans 1993: 183). In northern Iraq, the overall trajectory seems to have been somewhat different. The later seventh millennium may first have seen an increase in site numbers followed by a reduction in the early sixth millennium, or Halaf I period. Yet, site numbers slowly were creeping up also in this region in the later sixth millennium, during the Halaf II period (Campbell 1992: 110–24). Davidson (1977: 87) suggested that population numbers in Upper Mesopotamia for the later Halaf (ca. 5500–5300 cal BC) reached levels similar to today. While

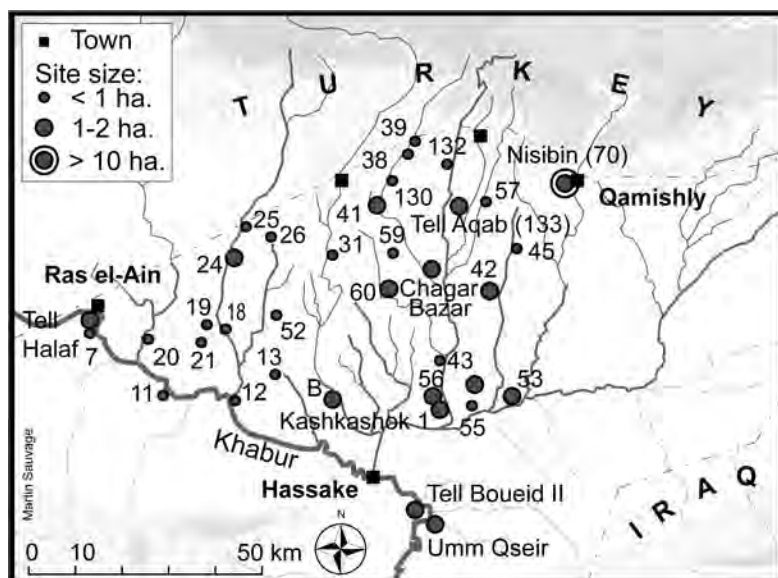


Fig. 9. Middle-Late Halaf (Halaf II) site distribution in the Khabur headwaters in north-eastern Syria. (From Nieuwenhuyse 2000).

this seems quite hyperbolic, it is safe to argue for a general but gentle increase in population in the later Halaf.

At the same time, settlements spread southwards towards the drier parts of the region. In the Upper Khabur, settlement shows an even distribution across the region for the first time (fig. 9), with a few new hamlets founded along the southern extension of the Middle Khabur River (Hole and Johnson 1987; Nieuwenhuyse 2000; Nieuwenhuyse and Suleiman 2016). There is now unequivocal evidence for sites also in the southern half of the Balikh Valley, extending to the Euphrates confluence (Akkermans 1993: 179–83). Several Halaf II sites have been identified along the course of the Euphrates River in Turkey and Syria (Cruells, Molist, and Tunca 2004; Robert 2010). In the semi-arid expanses between the perennial water sources, the Halaf II also is well attested. In the Wadi Hamar survey, all sites with evidence for occupation during the Halaf I period also were inhabited in the Halaf II period. Several new sites were founded during the Halaf II period (Becker 2015: 263–65).

Intriguingly, aspects of Halafian life ways may have spread amongst neighboring groups by emulation in this phase. At Tell el-Kerkh in the northern Levant, the Halaf I (Early Halaf) stage already shows evidence for the emulation of Halaf ceramic styles. Local potters copied Halaf forms and painted designs in local Dark-Faced Burnished Ware, decorating their vessels with pattern burnish-

ing (Tsuneki et al. 2000). As another example of the uptake of Halafian culture, the later Halaf community at Tell Kurdu in the Amuq shifted to using homemade Halaf Fine Ware (Özbal and Gerritsen 2013). In Iraqi Kurdistan, on the eastern margins of the Upper Mesopotamian world, Halaf “influences” in ceramic style occur for the first time in the Halaf II period (Hijara 1976, 1997; Nieuwenhuyse 2018a; Nieuwenhuyse et al. 2016a; Nieuwenhuyse and Robert in press).

Archaeologists have proposed a wide range of explanations for the spread of Halafian life ways. Earlier approaches suggested prehistoric migrations of a single Halaf “people” from some hypothesized “home land.” A more nuanced perspective on demographic factors suggested the continuous geographic spread of small communities through continuous splitting and “budding off” of egalitarian-minded Halaf communities (Breniquet 1996; Forest 1996). Other interpretations emphasized the spread of pottery rather than people. Pottery styles may have spread because of changes in marital patterns (Forest 2013), ceramic exchange (Davidson 1977; Davidson and McKerrell 1976, 1980; Le Mièrre and Picon 2008; Spataro and Fletcher 2010), a reorganization of pottery production by emerging elites (Watson 1983), or a new role for painted pottery as a facilitator of social emulation (Nieuwenhuyse 2007). As the different perspectives make clear, the debate is vigorously ongoing.

Furthermore, it is in the Halaf II period that differentiation in site size first becomes more clearly visible. Throughout the Halaf period, the majority of sites detected in surveys remained mostly small to very small, reaching 1 ha at the most. Halaf sites only occasionally have evidence for an extent between 1 and 4 ha in size, perhaps suggesting a weakly developed settlement size hierarchy (Akkermans 1993). These larger Halafian sites show a location preference close to perennial water sources; thus far, the more arid Wadi Hamar has not revealed any evidence for sites over 2 ha (Becker 2015: 265: abb. 120). In the later stages of the Halaf period, a few sites reached unprecedented proportions of over 10 ha, with some even growing to as much as 20 ha in size. Each major river system contains at least one truly large Halafian site. In the Khabur headwaters, this would have been Tell Nisibin (KS 70; fig. 9). In the Balikh Valley, the largest known site was Tell Mounbateh (Akkermans 1993: 199–203). The list includes Tell Zeidan on the Balikh-Euphrates confluence (Stein 2009), Tell Kazane near Urfa (Bernbeck, Pollock, and Coursey 1999), and Takyan on the Silopi Plain of eastern Turkey (Algaze, Hammer, and Parker 2012). Large Halaf sites existed in the western part of the Halaf cultural world as well, such as at Tell Kurdu (Özbal and Gerritsen 2013), and Domuztepe (Campbell and Fletcher 2013).

However, fierce debate surrounds the interpretation of these Halaf II “mega sites.” Where they large and densely packed, population centers? In southeastern Turkey, the large sites of Domuztepe on the Kahramanmaraş Plain and Tell Kurdu in the Amuq would indeed appear to constitute examples of large, densely

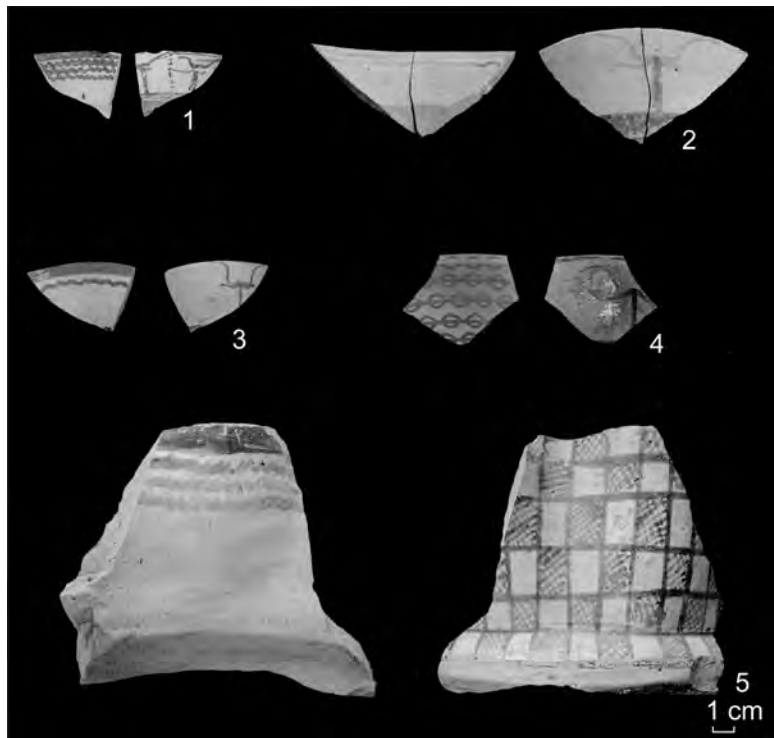


Fig. 10. Middle-Late Halaf (Halaf II) painted Halaf Fine Ware ceramic serving vessels from Tell Sabi Abyad. (From Nieuwenhuyse 2018: pl. 14.2; courtesy of the Tell Sabi Abyad Archive.)

built sites. Both sites were inhabited over long periods of time by considerable numbers of people (Campbell and Fletcher 2013; Fletcher 2016; Özbal and Geritsen 2013). In these places, local groups adopted “global” (i.e., Upper Mesopotamian) forms of commensality as reflected in the painted pottery (fig. 10); in terms of their agglomerated spatial organization they inhabited villages with a rather “Anatolian” flavour (Nieuwenhuyse 2016).

In contrast, regarding the evidence from the Upper Mesopotamian steppes, Peter Akkermans (2013a) has argued persuasively that site size in this area does not equal settlement size, and that population estimates are easily inflated. Contrasting dramatically with Early Chalcolithic villages in Anatolia such as Çatalhöyük-West (see Rosenstock et al. in this volume) or Hacilar (van Dam in this volume), Halaf villages in the Upper Mesopotamian steppes typically included large amounts of open space (Akkermans 2013a; Pollock 2013). Taking the dynamism of frequent relocation into account, the Halafian “mega site” can be explained as the palimpsest of small-scale settlement shifting over favorable spots in the local landscape across several generations (Akkermans 2013a).

Understanding settlement organization at the very end of the Halaf period remains a genuine challenge. Most archaeologists now would subscribe to the view that the transition from the Halaf to the Ubaid period was a process of cultural change rather than a complete break (Breniquet 1996; Campbell and Fletcher 2010). Yet, a “Halaf-Ubaid Transition” (HUT) remains virtually invisible in settlement studies (Akkermans 1993: 183–86; Iamoni 2016; Mühl and Nieuwenhuyse 2016; Nieuwenhuyse 2000). To a very large extent, this may have to do with the present inability to identify the properties of the Halaf-Ubaid ceramic transition. In spite of these obstacles, profound changes seem to have transformed the social landscape at the end of the Halaf period. For the Balikh, Akkermans (1993: 186) has reconstructed a process of increasing contraction and centralization to fewer numbers of larger sites. This laid the foundations for the ensuing Ubaid period.

Concluding Remarks

The end of the Late Neolithic period saw the clear establishment of the “advanced farming village” (Redman 1978: 177). This completed a process of settlement consolidation that had roots stretching back over two millennia into the Pre-Pottery Neolithic. By the end of the sixth millennium BC (the Halaf period), large and small villages dotted the landscape, supported by agriculture and herding practices. Innovations in container technologies, the intensified exploitation of secondary products, and the establishment of vast social networks connecting dispersed communities across Upper Mesopotamia facilitated this site distribution. Although the cultural transition to the Ubaid remains poorly understood at present, it seems safe to state that in the Late Neolithic the foundations were laid for the growth of complex societies during the Ubaid and Late Chalcolithic.

Yet to see this “accomplishment” as little more than the inevitable “end product” of the agricultural revolution would be overly simplistic. Based on the evidence from surveys and targeted excavations, the long-term development of settlements appears to have been nonlinear and uneven. Importantly, individual subregions offer varying amounts of evidence for the spread, densities, and roles of settlement. Given this state of affairs, it would be premature at this stage to put too much emphasis on discrepancies in site patterning identified by surveys using diverse scales, different methods for identifying and sampling sites, and different procedures for analyzing materials.

Nor did the Late Neolithic “package” establish itself overnight, taking almost two millennia of slow, incremental change to occur. Episodes of accelerated change punctuated this period, such as the profound set of transformations characterizing the end of the seventh millennium BC. Widely used terms such as the Neolithic “revolution” convey a false sense of emotional excitement and a

subjectively experienced understanding of change that is wholly inappropriate to most of the Late Neolithic context (Akkermans and Schwartz 2003). Finally, we must be aware of the danger of teleological reasoning. Simply because archaeologists may, retrospectively, trace the roots of later, historic societies to innovations first experimented with in the Late Neolithic, does not mean that Late Neolithic groups purposely worked their way towards these later accomplishments. The establishment of successful village farming societies across the Upper Mesopotamian steppes was an unintended consequence of innovations presumably made for entirely different reasons.

Above all, a reading of the Late Neolithic settlement evidence brings into relief the point that settlement data on their own remain little more than dots on maps. These silent distribution plots begin to speak only when contextualized in thick descriptions of prehistoric societies. This contribution has pointed out several instances in which the understanding of site distribution patterns rests on a proper understanding of underlying socioeconomic factors, such as the early stages of the Late Neolithic, or the appearance of “mega sites” in the later Halaf. High and low site numbers for specific subperiods invite widely divergent explanations depending on the broader interpretation of Late Neolithic societies. Several decades ago, Akkermans (1993: 4) bemoaned the serious deficiencies in our understanding that exist at virtually every level of investigation. Notwithstanding the unprecedented recent advances made in the archaeology of Late Neolithic societies in Upper Mesopotamia, much exciting work lies ahead of us.

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A History of the House at Late Neolithic Çatalhöyük

ARKADIUSZ MARCINIAK

Abstract: The Neolithic house was a focal point for the life of early farmers. It not only provided the basic necessity of shelter but served as a social object for creating and maintaining social bonds and relations. It was then both the production and consumption unit as well as major social entity. The site of Çatalhöyük in central Anatolia is known for its elaborate houses with rich furnishings and distinctive decoration, which are characteristic for its Early Neolithic phase of development. The Late Neolithic house, in contrast, marks a significant departure from the previously dominant form. Yet, these developments have not so far been systematically scrutinized. Here I present a synthetic overview of the major types of Late Neolithic houses at Çatalhöyük, dating to the final four hundred years of the settlement occupation, and revealed in the TP (Team Poznań) and TPC (Team Poznań Connection) Areas. Altogether, four distinct types of Late Neolithic houses at Çatalhöyük are discussed, from the oldest to the youngest: a late classic house; a solidly constructed house without a distinct floor; a light dwelling structure; and a multiroom house.

Keywords: Çatalhöyük, central Anatolia, Late Neolithic, household

The Late Neolithic marks the second major transition in the history of human societies in the Near East. While the Early Neolithic transition involved the emergence of sedentarism, domestication of plants and animals, and the beginnings of distinct art and imagery, as well as major technological advancements, the second transition comprised a *qualitative* transformation of these constituent elements of the Neolithic “Revolution,” creating conditions for strengthening and consolidating local groups and providing the prerequisite foundations for their spread across vast areas. The new mode of existence comprised individualized and autonomous social units, an integrated arable-husbandry economy, pastoralism, the occupation of forest and coastal areas, and sacral landscapes, as well as significant changes in material culture, including in the character of the dwellings (see, e.g., Akkermans and Schwartz 2003; Düring 2011; Özdoğan 2011; Marciniak 2016).

Houses were the core resources for the Neolithic communities. They not only provided the basic necessity of shelter but also served as social spaces that facilitated the creation and maintenance of social bonds and relations. As such, they were the locus of both production and consumption for the social units that lived in them. The relationship between the house and units of kinship, production, and consumption, however, is neither simple nor uniform. Moreover, this relationship may have changed as Neolithic groups grew and developed. Different houses may have been linked to each other by complex social ties and relations, creating residential units. They may have had different forms, from nuclear and extended families through “official” and “practical” kin to neighborhoods, sodalities, and house societies (e.g., Bourdieu 1970; Lévi-Strauss 1982; Joyce and Gillespie 2000; González-Ruibal 2006; Düring and Marciniak 2006; Hodder and Pels 2011; Pilloud and Larsen 2011).

The site of Çatalhöyük in central Anatolia has been widely known for its elaborate house with rich furnishings and distinctive decoration. The classic type of house was built of loam brick and was accessed from the roof by a ladder. Its internal space was carefully defined with domestic activities, as manifested by hearth and oven, taking place in the southern part of the structure, while its northern part, with decorated walls and benches, and platforms with burials beneath, served for ceremonial activities. It was occupied for two or three generations after which it was generally emptied of portable items and then carefully and systematically dismantled. Houses have a great degree of continuity, being rebuilt on the same location for up to five to six levels over several hundreds of years (Mellaart 1967; Cutting 2005; Hodder 2006, 2007).

As the scale of work of the Late Neolithic strata has been limited to date, the house from this period has never been systematically examined and its character is relatively unknown. Here I present an outline of major types of the Late Neolithic house at Çatalhöyük revealed in the TP (Team Poznań) and TPC (Team Poznań Connection) Areas, as an important manifestation of the Late Neolithic transition in central Anatolia. I focus primarily on their physical characteristics. The houses are discussed in the context of stratigraphy of the uppermost strata of the mound and within the newly adopted phasing scheme. The material character of the house will then serve as a means of inferring the nature of social groupings inhabiting the house and ultimately the nature of social changes in the Neolithic within the context of dynamic changes in the region in the second half of the seventh millennium BC. These goals are now more achievable than ever before due to significant methodological advancements at Çatalhöyük (Hodder and Marciniak 2015).

The work of the Late Neolithic levels at Çatalhöyük East in two distinct excavation zones—TP and TPC—has contributed significantly to understanding better this important period in the history of the Near East. It has revealed a

Table 1. Correspondence between levels from three major excavations areas at Çatalhöyük East and their relation to Mellaart's levels

Mellaart	<u>Levels</u>		
	South/North/TP		
I		TP-R	
I		TP-Q	
II		TP-P	
II		TP-O	
III	South T	North J	TP-N
III	South S	North J	TP-M
IV	South R	North I	
IV	South Q	North H	
(V)	South P	North H	
VIA	South O	North G	
VIB	South N	North G	
VII	South M	North F	
VIII	South L	North F	
IX		South K	
X		South J	
XI		South I	
XII		South H	
Pre XII		South G ₁ ,G ₂ ,G ₃ ,G ₄	

significant departure from the arrangements of the classic period, including the character and form of dwelling architecture. This ca. 400-year-long period was represented in the form of six superimposed levels, labeled from the earliest, TP-M, to the latest, TP-R. They correspond to Mellaart's Levels III-0, South S-T, North J, Summit, KOPAL, and IST (table 1; Hodder 2014: fig. 1). The period witnessed dynamic changes in different domains and can be divided into the early Late Neolithic (ca. 6400–6250 cal BC) and the late Late Neolithic (ca. 6250–5950 cal BC; Marciniak 2015b).

The work in TP and TPC Areas was carried out in the years 2001–2017 (fig. 1). Both excavation areas are located on the top of the southern eminence of the East Mound. The TP Area is placed directly to the east of Mellaart's Area A, which was excavated in the first season of the 1960s campaign (Mellaart 1962). It is 10 × 15 m. The excavations in the Area were conducted in the years 2001–2008 by the team from the Adam Mickiewicz University in Poznań, Poland and the



Fig. 1. TP and TPC Areas in relation to Mellaart A/B and South excavation areas

Institute of Archaeology and Ethnology, Polish Academy of Sciences (later University of Gdańsk) and were followed by a three-year study season. The TPC Area is placed between the TP Area and Mellaart's Area A to the north and South Area to the west. The strata recognized in the TPC Area are a direct continuation of

the sequence of levels in the South Area starting from the very bottom of the mound (see Hodder 2014). The Area is made of four interlinked trenches. Trench 1 is 5×5 m and is located directly to the south of the Mellaart Area A. Trench 2 is placed directly south of Trench 1 and its overall dimension is 5×6 m. Trench 4, measuring ca. 8×6 m, is located directly to the South. Trench 3 is located in southernmost part of TPC Area. It is quadrilateral in shape with southern and eastern edges being 10 m long and the northern edge measuring 6 m in length. A total surface of the TPC Area was ca. 150 m². The works in TPC Area were carried out in the years 2012–2017 by the team from the Adam Mickiewicz University in Poznań.

Stratigraphy and Phasing at the Late Neolithic Çatalhöyük

Arranging vertical stratigraphic sequences composed of superimposed buildings and their reconstructions, along with their relations to empty spaces, middens and other extramural deposits, is a complicated task at any tell site. It involves grouping recognized structures into levels and phases that are at least partially contemporary with one another. Introducing levels is a clearly interpretative tool and the process is often differently defined within different scholarly traditions and methodological schemata. Accordingly, phasing is certainly a separate action than establishing stratigraphic relationships among excavated structures and deposits, as it reflects a wide range of preferences for grouping the data.

The first phasing system at Çatalhöyük was introduced by James Mellaart in the 1960s (Mellaart 1967). Each superimposed building, its rebuilding, and ultimate closure, was attributed to a site stratification system called a “level.” Altogether, Mellaart defined fifteen superimposed building levels numbered from XII at the bottom of the south eminence to 0 at the crest of the East Mound.

The new phasing system at the site was introduced in the 2000s. It is based upon the grouping of roughly contemporary structures and activities into levels. These levels are based on secure stratigraphic relationships. This new sequence is based on a single stack or column of buildings, which has been constructively demonstrated to be sequential in time. Implementing it involved rejecting Mellaart's labeling of levels with roman numerals, which was replaced by area-specific phasing and indicated by an area suffix such as South-T, North-H, TP-N and so on. The levels are labeled from the earliest to the latest, but the middle part of the alphabet has been used to allow for additions at either end (Bayliss, Farid, and Higham 2013).

Following the foundations of this new phasing program, the new TP strand, based upon the stratigraphy of the uppermost levels, was developed in 2010 for the TP Area and later adopted for the TPC Area. The Late Neolithic levels were labeled using letters of the alphabet from TP-M through TP-R. They substituted

Mellaart's levels 0, I, II, and III (1967). Consequently, the TP levels are now used to label all uppermost strata of the main strand of the East mound Catalhöyük, which span the complete Neolithic sequence. They are placed directly above the South Hodder Levels used to delimit the strata from the very bottom of the mound (table 1; see, e.g., Bayliss et al. 2015). The early phase of the Late Neolithic in the TP and TPC Areas overlaps with two uppermost levels in the South sequence (South S-T) (see Regan 2013).

The work in the TP and TPC Areas revealed a complicated stratigraphy involving a complex history of occupation with numerous reconstructions, rebuildings, and abandonments of houses and their changing relations with open spaces of different character. An implementation of the Late Neolithic phasing development in the TP Area was possible thanks to the recognition of superimposed dwelling structures. Its point of departure was a discovery of six dwelling structures (B. 81, 74, 72, 73, 62, 61). Each of them was defined as representing a separate level. A detailed examination of the TPC stratigraphy revealed its direct correspondence with the stratigraphy and phasing developed for the TP Area. Consequently, the TP strand was adopted for this Area and all nine dwelling structures (B. 121, 122, 150, 166, 110, 152, 109, 115, and 133) unearthed there were ascribed to one of the six Late Neolithic TP levels.

The earliest level in TP and TPC Areas is TP-M. It is represented by five houses. These are solid constructions with distinct floors and numerous in-built structures, such as platforms, hearths, ovens, and bins. They have been used intensively as implied by their numerous reconstructions. The walls in three of them, which have been preserved, were covered by plaster and then painted with a black and white geometric design. Their abandonment was followed by a short period in which the area went out of permanent use, as manifested by layers of midden and infill with indications of use in the form of hearths and activity areas.

The following TP-N is characterized by solid multiroom houses with compound walls but without distinct floors and burials beneath them. They were built either on middens or in fill deposits, which marks a discontinuation in the sequence and layout of buildings. Four houses represent this type.

Level TP-O marks a major discontinuity in the occupational sequence in both Areas. It is manifested in the form of a light dwelling structure recognized in the TP Area. It comprised an open space, probably surrounded by walls, and a hut-type construction, with a light roof. The following Level TP-P is represented by an open space, possibly a courtyard, which has been intensively occupied. However, following the adopted phasing solutions, it has been defined as a building and ascribed a number 73 (Space 432).

Levels TP-Q and TP-R are characterized by distinct multiroom dwelling structures of significant size. They were built directly on top of the midden and

infill layers of the open area from the preceding level. Altogether, five such buildings have been recognized in the TP and TPC Areas.

Form and Character of Late Neolithic Houses

Altogether four distinct types of houses have been distinguished in the Late Neolithic Çatalhöyük. These are: (1) late classic house from TP-M level; (2) solid house without distinct floors from TP-N level; (3) light dwelling structure from TP-O level; and (4) multiroom house from TP-Q and TP-R levels.

Late Classic House

Excavations in the TP and TPC Areas revealed a sequence of the late classic houses characterized by a range of features that make them distinct from the classic form of house at Çatalhöyük. These are located at the very bottom of both Areas and dated to TP-M level. Altogether, five such houses were recognized: B. 81 in the TP Area and B. 121, B. 122, B. 150, and B.166 in the TPC Area.

The late classic house is a relatively large building with a suite of in-built structures and a complex history of occupation involving numerous reconstructions and rebuildings. Similarly as in the classic phase, the northern part of the room was of ceremonial character while the southern part seemed to serve domestic purposes. It usually had distinct and well-maintained floors, subsequently built platforms, benches, and bucrania, as well as ovens and bins. Human burials were placed beneath some of the platforms. An interior of some of them was richly decorated in the form of sophisticated geometric paintings, mostly composed from simple figures like circles, lines, and triangles. The house abandonment was a deliberate and elaborated act. Interestingly, shortly afterwards, its space may have been temporarily used, as indicated by fire spots and activity areas of different form (see Marciniak 2015b).

One of the best recognized houses from this phase is B. 150 in the TPC Area. This is a large building with single walls of yellowish silty clay mud bricks. It covers an area of ca. 50 m². All the walls, but a larger part of the southern wall, are within the perimeter of Trench 4. The western, eastern, and northern walls were plastered and most likely painted. The scale of the wall decoration remains unspecified due to their destruction resulting from post-Neolithic activities. The internal layout of the house consists of a series of platforms and benches laid down alongside its eastern and southern walls.

The extent of excavation works in B. 150 made it possible to distinguish four distinct phases of its occupation. The original phase of its use has most likely not been reached. The final phase of the building's use (Space 594) bears all major characteristic features of the late classic house. The floor was made of a sequence of three distinct deposits: each of them had a similar texture and was composed



Fig. 2. Çatalhöyük East. B. 150, Sp. 594, F. 8278. Oven on southern platform. (Photograph by Anna Rybarczyk.)

of number of superimposed striations of gray plaster and very thin layers of make-up, which is indicative of intensive use. A small fire spot was located in the northern part of the house.

Two distinct and carefully designed platforms were built against the southern wall of the house and were physically linked with the central platform. A sequence of superimposed fire installations, one fire spot and three ovens were built on these platforms. The most distinct of them was a large oven F. 8278 (fig. 2). This is a regular, squared structure with a distinct floor and solid superstructure made of walls preserved to the height of 20 cm. These elements comprise the domestic part of the house where a range of daily activities was carried out.

Beneath the central-eastern platform of the house, as many as twenty-two individuals were interred in the form of primary, secondary, and tertiary burials. The most distinct was an adult female who died during the final stages of pregnancy and was buried with the baby in utero. She was accompanied by an adult primary disturbed inhumation. It had of red pigment on the frontal bone in the form of a straight, neat “stroke” of paint and was accompanied by a shell with red pigment and fragments of animal bones apparently associated with the skeleton (fig. 3). The closure of the burials involved the deliberate placement of two elaborate figurines next to the cut and carefully plastered platform surface. One of them represents a completely preserved large standing female figurine. It is made of marble, is ca. 17 cm long, and weighs more than 1 kg (fig. 4). The sec-



Fig. 3. Çatalhöyük East. B. 150, Sp. 594, F. 8759. Male skeleton with “stroke” of paint on the skull. (Photograph by Jason Quinlan.)

ond standing female figurine was carved and incised from pale yellow limestone. It is ca. 7 cm long and weighs around 55 g.

The change in the layout of the house in subsequent phases of its use involved the reconstruction of the platform, replastering of the floors, and the replacement of ovens or hearths. Of particular significance from one of the earliest phases of occupation was a special-purpose room in the southwest corner of the house (F. 8672). It contained numerous objects, mostly worked stones and stone tools including querns, pestles, polishing axes, balls, and a macehead. Two female stone figurines were found on the room’s floor. Other elements in the cluster comprised a wooden bowl, a bone spoon (fig. 5), needle, points, an obsidian core, and leaf blades as well as cattle scapulae and mandibles.

B. 122 in the southern part of the TPC Area also has a distinctive character. Only the final phases of its use were revealed during the excavations and the larger part of it was located outside the perimeter of the trench. The house was oriented east–west. The section within the trench was ca. 5 m long and 4 m wide. Single walls of yellowish silty clay mud bricks were plastered and painted with a black and white geometric design in the form of vertical and transverse sets of parallel lines. Numerous features were revealed inside the room, including platforms, benches, and bucranium in its northern and eastern part, and ovens and hearths in the south. Of extraordinary character were two small pillars painted over with a geometric design, and placed on the bench, itself located against the



Fig. 4. Çatalhöyük East. B. 150, Sp. 594, F. 3855. Female figurine. (Photograph by Jason Quinlan.)

northern wall of the room. At least two distinct phases of its occupation were distinguished, as indicated by a sequence of superimposed floors (fig. 6).

An earlier phase of B. 122 included the construction of a distinct storage room (Space 493) of 3 m² with five small bins. The room in-fill yielded a large quantity of botanic remains and several ground stones. A pure and large deposit



Fig. 5. Çatalhöyük East. B. 150, Sp. 639, F. 8672. A bone spoon from the southwest room. (Photograph by Jason Quinlan.)



Fig. 6. Çatalhöyük East. B. 122, Sp. 562 and Sp. 493. (Photograph by Jason Quinlan.)

of naked barley was found in bins and a large, charred grain concentration and thick layers of articulated phytoliths represented a deposit of elongated “striate emmeroid” wheat. The bin finds of barley indicate that this was stored as pure grain ready for food preparation, with few inclusions of chaff or weed seeds (fig. 7; Fuller et al. 2014).

Another distinct late classic house, B. 121, was discovered in Trench 2 in the TPC Area (Marciniak et al. 2013). Similar to B. 122, only its final phase of occupation was unearthed and partly excavated. Its eastern and northern single walls were inside the trench while the remaining two were situated beyond its perimeter. They were plastered and painted with a black and white geometric design in the form of vertical and transverse sets of parallel lines, similar to that in B. 122. It was a relatively large house with a suite of in-built structures, including



Fig. 7. Çatalhöyük East. B. 122, Sp. 493. Storage room with bins. (Photograph by Jason Quinlan.)

platforms, hearths, and bins, which followed a division into “clean” and “dirty” segments. A large fire installation was placed in the center of the house. It was rectangular in shape and had thick, raised, plastered walls. Five platforms along the eastern and northern walls of the building were not contemporaneous, which is indicative of the house having subsequent reconstructions. It is very likely that the burials were placed beneath the house’s eastern platform.

An exemplary case of the late classic house, B. 81, comes also from the TP Area (fig. 8). As it has only been exposed and recorded but left unexcavated, neither details of its use nor subsequent reconstructions are apparently revealed (Czerniak and Marciniak 2008). The central room was ca. 47 m². Recent work carried out east of the TP trench in the Mellaart Area A/B (Mellaart 1962) revealed an arguably western room of B. 81 (space 555) of ca 20 m², the floor of which was placed as much as ca. 50 cm below the main room of this house (Barański, Nowak et al. 2015).

The white floor was made of fine striations indicating numerous replasterings. The uppermost floor was made on a 6-cm-thick make-up comprised of small white pebbles mixed with brownish clay. A sequence of platforms was placed alongside the eastern wall of the house, while two superimposed platforms were placed in its southeast corner. Both of them were covered by a solid gypsum layer and constructed upon a thick make-up of white pebbles, similar to the house floor. A large platform ca. 4 m² was placed in the central-southern part of B.81. Eastern platforms were truncated by later burial chamber Sp. 327 and we can only speculate that this may have destroyed burials beneath the platforms (fig. 9).

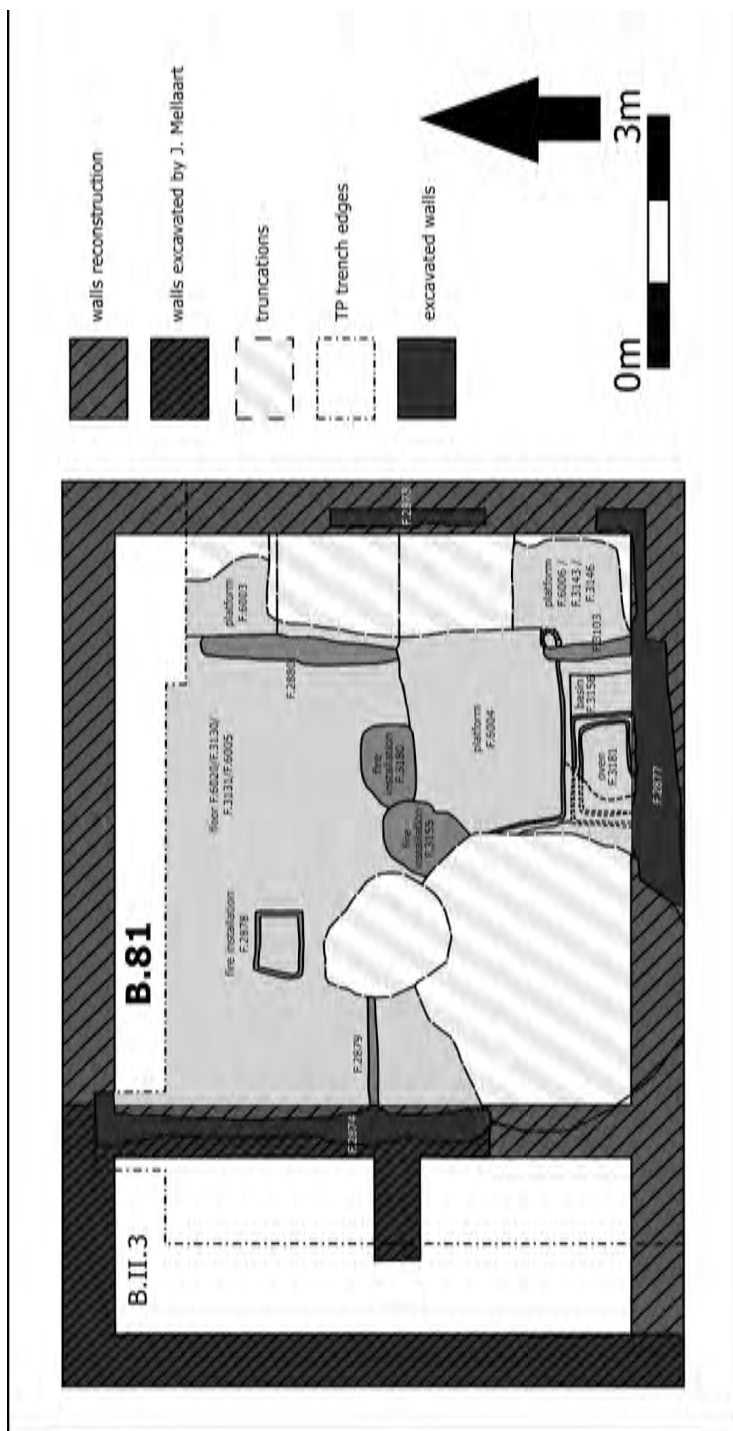


Fig. 8. Çatalhöyük East. B. 81. Building layout. (Drawing by Jędrzej Hordecki.)



Fig. 9. Çatalhöyük East. B. 81, Sp. 440. Central–north part of the building with eastern platforms destroyed by later burial chamber Sp. 327. (Photograph by Andrzej Leszczewicz.)

An elaborate oven with a solid superstructure was built against the southern wall. It was rectangular in shape and was made of two parallel walls, each ca. 7 cm thick. The base was solidly built and had a smooth outer surface ca. 1 cm thick. Next to the oven base, a special deposit in the form of pit with a vessel was placed, in addition to the base of a ladder. A solid, oval fire installation was also built against the centrally placed platform. Two partition walls were set to distinguish a small basin sitting against the southern wall of the house with an elaborate southern oven. It was certainly constructed after both the partition walls and the basin had been constructed. A short north–south partition wall (the preserved length = 2.46 m) was placed on the building floor against its northern wall and close to northeast of the wall.

Solid House without Distinct Floors

The abandonment of the late classic building was followed by the construction of solid multiroom houses with no distinct floors and without burials beneath the platforms and floors. This type of structure appears in TP-N level and is represented by B. 74 in the TP Area and by B. 110, B. 152, and Sp. 520 in the TPC Area.

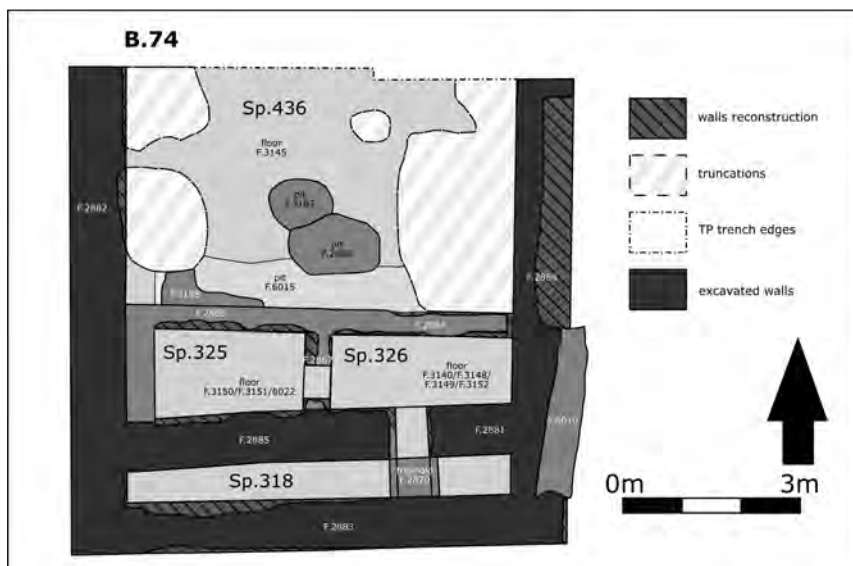


Fig. 10. Çatalhöyük East. B. 74. Building layout. (Drawing by Jędrzej Hordecki.)

The houses of this type were built either on a midden or on in-fill deposits following a partial destruction of the preceding structures. They had solid, well-preserved walls that were bonded with one other, indicating the contemporaneity of the construction of their constituent parts. The house was ca. 50–70 m² in size and was composed of two to four distinct rooms. In most cases, floors were difficult to detect, which means that they either did not exist or were completely destroyed.

B. 74 is an exemplary case of this type of dwelling structure (fig. 10). It had compound walls of ca. 0.9 m in width with alternating courses of stretchers and headers. It was made of brown, yellowish mud bricks with standardized dimensions. Its area inside the trench was ca. 47 m² (Barański, Garcia-Suarez et al. 2015). It had two distinct rooms at the beginning of its use. Its main northern part was originally set to be one elongated space with a doorway at the floor level leading from a small room of ca. 4 m² in the southern part of the building. It was devoid of any features except for a narrow eastern platform. No floor was distinguished in either of the rooms.

Two additional rooms (Space 325 and 326) were added during later reconstruction of the house by inserting them into its south-central part, directly north of the elongated southern room. They had a regular rectangular shape measuring ca. 2.5 m east–west and 1.50 m north–south. Their floors were of solid, fine construction with abundant plastering on a sequence of make-up layers. Neither platforms, benches, fire installations, nor bins have been constructed. An interesting construction feature is the small buttresses that were placed against their



Fig. 11. Çatalhöyük East. B. 74, Sp. 315. Abandonment deposit. (Photograph by Jason Quinlan.)

longer walls. They were made of mud bricks and arguably were associated with the roofing of both spaces. They might have been set up to hold beams placed against both walls, which themselves were set up to hold transverse beams holding the roof not only of both added rooms but of the entire building (Barański 2009: 89). During this phase of the house's use, the surface of the major room (Space 436) went out of use: it was truncated and later backfilled with a midden-like layer mixed with construction debris. The final phase of the house's use comprised a partition wall between Spaces 325 and 326 (F. 2887) with a crawl hole connecting them: this was later intentionally blocked off. The abandonment of the building involved a deliberate placement of cattle bones, including scapulae and rib in addition to a cluster of small stones (fig. 11). Following the abandonment, the interior of both rooms was deliberately backfilled with heterogeneous deposits containing a large number of small human bones and fragments of white pebble floor.

B. 110 from the TPC Area is another example of this type of dwelling structure (fig. 12). It has preserved dimensions ca. 8×6 m. The walls were made of solid yellow/sand-colored bricks. The eastern wall was constructed is the previously prepared foundation cut, a practice recognized also in the TP Area. The house was divided into two rooms by the east–west partition wall (Space 485 and 486; Marciniak, Filipowicz, and Mickel 2012; Marciniak et al. 2013). The floor has not

been reached, which may indicate that it either did not exist or was completely destroyed. Both rooms were filled in with a fairly homogenous sequence of ca. 1.30 m deep and composed of small striations indicating its long and continuous accumulation. Following the abandonment of Building 110, the area went out of use for some time. It was later reoccupied in the form of some kind of open space, as identified by a solid brickly layer with fragments of a tramped floor. Sometime later, the area went out of use and was transformed into a midden.

Light Dwelling Structure

The light dwelling structure is only represented by one structure, B. 72, from the TP Area, and is dated to TP-O level. The house was built within the interior of abandoned B. 74, respecting its external and internal walls. It appears to be composed of an open, unroofed space, possibly a courtyard, in its northern part and a hut-type construction with two rooms, with a light roof in its southern part. The courtyard was 22–25 m² large in different phases of its use. The open space was intensively used, as indicated by numerous hearths. The roof was supported by a number of posts in the perimeter. The size of the house within the trench was 47 m², however its size might have differed in different phases of its occupation.

The house underwent three major reconstructions. In the first phase, it was mainly associated with the use of a large, open space in the north-central part of the building (Space 435), as manifested by numerous solid fire installations with well-preserved superstructures, including an oven. They were placed on a heterogeneous midden mixed with construction material. In the following phase, the intense use of the northern part, marked by new fire installations, continued, but the southern part underwent a major reconstruction. It involved the reuse of two rooms from the previous B. 74 in its central-southern part (Space 323 and 324) of total surface area of ca. 9.4 m². Their internal layout was very simple with no platforms, benches, bins, or other kinds of in-built features. The poorly preserved floors were made of a thin grayish plaster. Three deep postholes were placed against the southern wall of both rooms, which may have been used to support some kind of a light roof over this part of the building (fig. 13). An elongated room (Space 428) was in use along the southern wall of B72, directly south of Spaces 323 and 324. It was constructed directly above Space 318 from B74. These two rooms were connected by a wide doorway in a double partition wall. This southernmost room had a solid tramped surface/floor. It was clearly discontinuous as not all deposits were preserved. Three deep postholes were placed against the southern and northern walls of Space 428. These were identical to postholes from two adjacent rooms directly to the north and may also have been used to support a light roofing. Transversely placed bricks, making some sort of a partition wall, were aimed at dividing the room into two parts. This development clearly marks a later reconstruction of the room, associated with the final phase



Fig. 12. Çatalhöyük East. B. 110, Sp. 486. House fragment. (Photograph by Jason Quinlan.)

of its use. The abandonment practice did not involve a deliberate backfilling of the house interior space.

Multiroom House

The latest type of the Late Neolithic dwelling structure at Çatalhöyük comprises a large and multiroom house. It is represented by five buildings: B. 61 and B. 62 in the TP Area and B. 109, 115, and 133 in the TPC Area. They come from the two final Late Neolithic TP-Q and TP-R levels. They were built directly on top of the midden and infill layers from the preceding period. These houses were composed of a large main room with central hearth and were usually surrounded by multiple smaller rooms and annexes. They have street-level exterior entrances, which, in tandem with the emergence of streets and passageways, made the houses more easily accessible than in the classic period.

The best preserved examples of this type of house are B. 61 and B. 62 from the TP Area. They were distinguished as two separate buildings but considering the significant similarities between them, may in fact have been two major reconstructions of one dwelling structure. B. 62 was built on top of midden and rubble layers from the preceding level and has an overall surface of ca. 70 m² (fig. 14). A solid platform was placed against its eastern wall as well as a few built-in structures. It lacked intramural burials. The central placed hearth and oven were constructed directly above fire installations from the preceding open space area (B.73), indicating a continuous use of the space and its spatial division. The build-



Fig. 13. Çatalhöyük East. B. 72, Sp. 428. Side room with postholes. (Photograph by Jason Quinlan.)

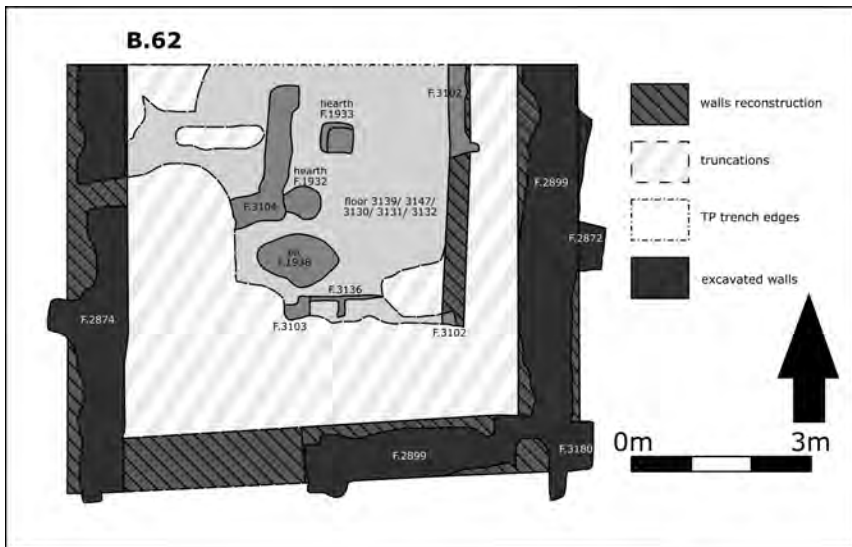


Fig. 14. Çatalhöyük East. B. 62, Building layout. (Drawing by Jędrzej Hordecki.)



Fig. 15. Çatalhöyük East. B. 61, Sp. 438, Main room. (Photograph by Jason Quinlan.)

ing underwent numerous reconstructions, as indicated by a complex sequence of floors and partition walls.

The following B. 61 largely resembled its predecessor (fig. 15). It had only a few built-in structures. A solid square oven was placed in its central part and was built directly above the oven from the older house B.62. It was also intensively used and modified a number of times, as indicated by a complex sequence of floors and partition walls, which were particularly evident in its western room (Space 438). The latest floor had a very distinct character: it was built on a basal layer made of destroyed construction debris followed by a layer of pebbles enclosed by a calcareous mass. In this occupational phase, the internal space of the house was divided into smaller rooms by partition walls.

The exact function of the eastern room of the house (Space 434) is debatable. It was a rectangular construction with the dimension within the trench of 3.60 m × 1.60 m. Fragments of the compact gray silty floor have been identified in the room's central part. No in-built features were present on the room's floor.

B. 133 from TPC Area is also a representative example of this type of construction. It was composed of three rooms, most likely surrounding some kind of a large room. It had few in-built structures. Details of its construction are difficult to reconstruct due to considerable destruction by the post-Neolithic occupation.

Two other houses of this type from the TPC Area were equally destroyed. B. 115 was only preserved in the form of a small fragment of unspecified platform.

It was placed directly on the midden and the following make-up layer was made of small pebbles. The outer surface was a whitish plaster. This construction is almost identical to the latest floor of B. 61. It had two distinct superimposed floors. A fragment of a short east–west-oriented partition wall was discovered east of the “platform.” The latest dwelling structure in the Area was B. 109. It probably respected both the size and layout of B.110 from TP-N level. The walls were made of poor-quality grayish/beige bricks of a standardized length of 80–82 cm.

Chronology and Duration of Occupation

As of today, seventy-nine radiocarbon measurements are available from the Late Neolithic deposits, including fifty-six from the TP Area and twenty-three from the TPC Area. Radiocarbon dates available to date from the TP Area are very homogenous and date the Late Neolithic sequence in area between ca. 6300 and 5950 cal BC. The currently available dates from the TPC Area are very similar and are in the range of ca. 6400 to 6100 cal BC. As the TPC Area is situated on a slope, the absence of the latest levels is most likely caused by erosion and natural processes in addition to considerable destruction resulting from post-Neolithic activities rather than by the earlier abandonment of this area compared with the TP Area. There is certainly an overlap between the uppermost levels in the south sequence and the lowest levels in the TPC Area with TP-M corresponding with South S and TP-N with South T levels (see, e.g., Regan 2013).

The radiocarbon dating for Çatalhöyük East is conceived within a Bayesian statistical framework (see Bayliss, Farid, and Higham 2013). This allows its chronology to be estimated, using an explicit statistical methodology, from both the radiocarbon dates and the sequence revealed by archaeological excavation. The Bayesian chronological model for the TP Area has already been completed (Marciniak, Barański et al. 2015) while the corresponding model for the TPC Area is in preparation. Hence, a systematic comparison of the chronology of subsequent levels in both areas, along with corresponding architecture, cannot be carried out reliably at the moment. However, a range of dates from each of the house types in the TPC Area makes it possible to draw some parallels with the TP Area sequence recognized within the Bayesian chronological model.

Results of Bayesian modelling of TP sequence indicate that B. 81 was abandoned and became a midden area in 6375–6255 cal BC (95% probability). Because of incomplete excavation, neither building construction nor its earliest phase of occupation was recognized. The range of dates from late classic buildings from the TPC Area are between 6450 and 6250 cal B. (95.4%).

The corresponding results for the second type of house show that B. 74 occupation be dated to the end of the sixty-fourth and beginning of the sixty-third centuries BC and was used for only one to thirty years (use B.74; 95% prob-

ability), which is a very short time for such a solid construction. Existing dates for similar structures in the TPC Area seem to confirm the TP dates as they are within the range of 6350–6250 cal BC.

The light dwelling structure is only represented by B. 72 from the TP Area. It had been in use for 30–155 years (95% probability) and was abandoned in 6230–6160 cal BC (95% probability). No corresponding structures were recognized in the TPC Area. Following abandonment of the light dwelling structure in the TP Area, the area was devoid of any houses, it was turned into the midden area, which was continuously used for a period of 5–65 years (95% probability). A similar discontinuity in permanent occupation was also recognized in the TPC Area.

Multiroom houses from TP-Q and TP-R levels comprised the final type of the Late Neolithic house at Çatalhöyük. B. 62 was constructed in 6170–6100 cal BC (95% probability) and was in use for a period of only one to thirty years (95% probability). The succeeding B.61 was constructed in 6155–6090 cal BC (95% probability) and was abandoned in 6095–6020 cal BC (95% probability). The existing dates from multiroom houses from the TPC Area place them in a similar period between 6220 and 6070 cal BC (95.4%; Marciniak, Barański et al. 2015).

Changes to the Late Neolithic House in Broader Perspective: Final Remarks

The ongoing work on the Late Neolithic strata at Çatalhöyük reveal a gradual reduction of the house to its living functions and the marked removal of burials and elaborate symbolism out of its realm. Despite many changes in the organization of space and character of the Late Neolithic houses, they have also some striking similarities. This is manifested in their sheer size, inserting smaller rooms into existing larger structures as well as a lack of intramural burials and monumental installations. Many of them had floors built on a clay-silt make-up with numerous small pebbles. The walls in houses from levels TP-O to TP-R were not preserved, implying a lack of the deliberate in-filling customary throughout most of the Çatalhöyük sequence. These types of houses, except for late classic buildings, had a very few in-built structures, most often different fire installations. They were no longer accessed through the roofs but via door openings and they were surrounded by different kinds of passageways and courtyards.

The availability of dozens of radiocarbon dates from both areas as well as the application of the Bayesian statistical framework make it possible to provide a precise calendrical chronology for the Late Neolithic deposits in the TP Area of Çatalhöyük East. The reported dynamic changes in the site architecture and space organization began somewhere in the sixty-fourth century BC and continued over a period of more than three hundred years. They are recognizable

in both the TP and TPC Areas. A number of contemporary houses are located at subsequently lower levels moving southwards along the slope, which may be indicative of some kind of terracing respecting the shape of the mound. This pattern is particularly distinguishable in TP-M level from the TPC Area with subsequent contemporary houses B. 121, B. 150, B. 122, and B. 166 being built on the slope. The TPC Area appears to be abandoned ca. 100 years earlier than the corresponding TP Area but this well may be due to a slope erosion.

It has long been argued that changes around ca. 6500–6400 cal BC signal the beginning of a new social, economic, and religious organization of the local community (e.g., Mellaart 1967; Hodder 2006, 2014). The developments in subsequent centuries, as recognized in both TP and TPC Areas, can be seen as a continuation of these processes. These involved changes in major constituent phenomena of the Neolithic Revolution, manifested in the emergence of individualized and autonomous social units and an integrated arable-husbandry economy. These created conditions for strengthening and consolidating local groups and provided prerequisite foundations for their spread across vast areas (Marciniak 2015a, 2015b).

Paradoxically, these transformative processes led ultimately to the demise of the settlement at Çatalhöyük. Its inhabitants became deeply immersed in the bygone world of their Early Neolithic ancestors and, occupying a surface of the increasingly amorphous mound, soon found themselves lagging behind the dynamically developing region. The way of life remained rather conservative, maintaining the traditional forms of living and not adopting a suite of rapidly emerging developments, such as stone architecture technologies and stylistics of pottery production, including S-profiled vessels and vessel painting, as well as continuous exploitation of wild cattle in nondomestic settings (Özdöl Kutlu et. al. 2015). With the abandonment of the final type of house at the beginning of the sixth millennium cal BC, the settlement on the East mound at Çatalhöyük came to an end.

These processes led the local community to shrink and slowly abandon different parts of the previously large settlement. The northern part of the mound went out of use around 6400–6300 cal. BC decreasing the size of the settlement by ca. 30 per cent. The period around 6250/6200 cal BC brought about further abandonment of subsequent parts of the settlement, which may have been caused by migration of a large portion of its inhabitants starting around the middle of the seventh millennium cal BC. The number of inhabitants may have become even smaller after 6100 cal BC when B. 62 was constructed and all parts of the settlement except for the uppermost sections of the southern eminence of the East mound were abandoned.

This brief overview of major changes in architecture and inhabited space in the Late Neolithic at Çatalhöyük presented in this chapter gives some insight into

the rapid changes in the second half of the seventh millennium BC. They may have been linked with the process leading to the emergence of individual farmsteads controlling storage and production. As proven by the analysis of a range of bioarchaeological data, they appeared to become self-sufficient, shorter term, and more focused on consumption and the control of production (Souvatzi 2008) and increasingly more efficient in managing their own resources and interrelations. Inhabitants of the emerging households had to accommodate the higher level of managerial and organizational skills in arable and husbandry-related activities. This increased autonomy of the household, along with the dominance of a domestic mode of production and consumption, contributed to a durable and successful economy in which crop and livestock husbandry were closely integrated and intensively managed.

The increasingly more pronounced household ownership and autonomy may itself be linked to more intensive use of animals and plants. The ultimate outcome of these processes, as revealed by anthracological studies, were riparian woodlands around the settlement being converted into completely managed and distinctly anthropogenic habitats. Late Neolithic farmers at Çatalhöyük started to exploit diverse resources of poorer quality closer to the settlement instead of the exploitation of high-quality resources from selected parts of landscape in the preceding period. It involved a shift to summer herding in areas adjacent to settlement at the expense of longer-distance herding and emerging of the practice of keeping animals in the house compound during winter facilitated by easier access to fodder. The wood procurement strategy changed completely towards the end of the Çatalhöyük occupation. The significance of oak and juniper declined radically and they were replaced by the narrow range of riparian taxa including elm, ash, hackberry, and *Salicaceae*. This may represent the switch of wood-gathering activities from the surrounding uplands to the locally available riparian vegetation. Long-distance trips aimed at procuring these resources were abandoned (e.g., Henton 2012; Marciniak 2015a; Marciniak, Asouti et al. 2015).

The discussed changes in the Late Neolithic changes may have been triggered by the abrupt climatic event that occurred at approximately 6200 years cal BC. The local farmers may have experienced difficulties in herding domesticates and they had to demonstrate resilience and adaptability to new ecosystems. The local climate proxy obtained through the $\delta^2\text{H}$ analyses of fatty acids from animal fats preserved in pottery vessels from the Neolithic site of Çatalhöyük tends to indicate a change in climate coincident with the 8.2 kyr BP abrupt event (Roffet-Salque et al. 2018).

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The Transition between the East and West Mounds at Çatalhöyük around 6000 cal BC: A View from the West

EVA ROSENSTOCK, JANA ANVARI, INGMAR FRANZ,
DAVID ORTON, SONIA OSTAPTCHOUK, ELIZABETH STROUD,
AND PETER F. BIEHL

Abstract: Investigation of the transition between the Late Neolithic (LN) and Early Chalcolithic (EC) around 6000 cal BC on the two mounds at Çatalhöyük in central Anatolia is hampered by the erosion of the relevant layers on the East Mound and the fact that the corresponding layers on the West Mound are buried under developed EC occupation deposits. This article sheds light on the process drawing on evidence from Trench 7, a ¹⁴C-dated deep sounding on the eastern fringe of the West Mound. It appears that Çatalhöyük—an isolated site during the first half of the seventh millennium—is reconnected to the outside world during the second half of the seventh millennium and subsequently reestablishes certain traits characteristic of the central Anatolian Neolithic in the first half of the sixth millennium. Socioeconomic developments characterized by the “Second Neolithic Revolution” and “Painted Pottery Revolution” on the one hand, and rapid climate change brought about by the 8.2 event on the other hand, could be the motor behind these developments. What looks like a major change in settlement structure on a regional scale around the site appears to be a gradual shift of the occupation focus rather than a hiatus at Çatalhöyük, while in other parts of the Konya Basin settlements even show continuity.

Keywords: Çatalhöyük, 8.2 cal BP climate event, Painted Pottery Revolution, second Neolithic Revolution

Çatalhöyük East and West: Two Sites or One Site with Two Mounds?

The West Mound at Çatalhöyük is situated ca. 300 m west of the older East Mound (fig. 1) and covers an area of ca. 8 ha. It was first excavated by James Mellaart in 1961 (Mellaart 1965) in the course of his excavations on the East Mound (Mellaart 1967). Mellaart dug two soundings on top of the hill and distinguished two phases of the Early Chalcolithic (EC I and EC II) based on the pottery, but abandoned its further excavation in favor of the investigation of the

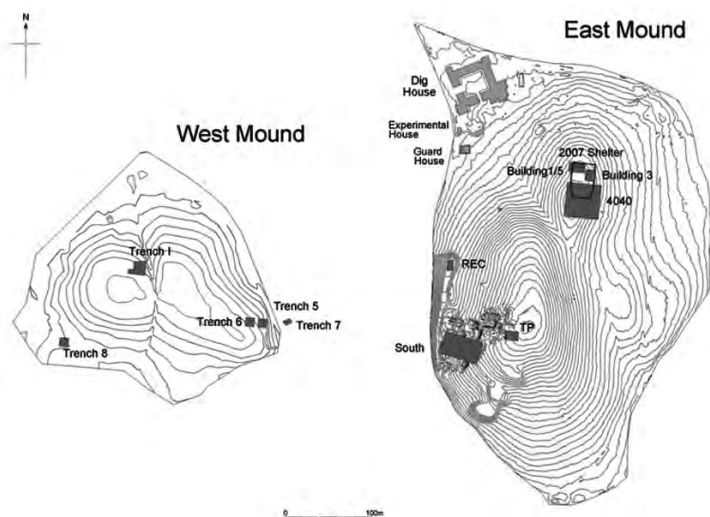


Fig. 1. Topographical map of the two mounds of Çatalhöyük and position of the trenches mentioned in the text (Hodder 2014, fig. 1).

less known Early and Late Neolithic (EN and LN) found at the East Mound. After all, Mellaart had already thoroughly investigated the EC at the site of Hacilar between 1957 and 1960 (Mellaart 1970), and David French had just started excavations into the EC of Can Hasan I only ca. 80 km southeast of Çatalhöyük in the same year (French 1962) in order to create a link between the key stratigraphy of Mersin-Yumuktepe in the Cilician Plain (Garstang 1953) and inland Anatolia.

Mellaart compared the ceramic material from the latest well-preserved level II of Çatalhöyük East with that of Neolithic Mersin-Yumuktepe XXVII and the EC of Çatalhöyük West with Proto-Chalcolithic and Early Chalcolithic Mersin-Yumuktepe XXIV to XX. Hence, only a short gap contemporary with Mersin-Yumuktepe XXVI and XXV opened up between the two mounds at Çatalhöyük, which was filled according to Mellaart with “the badly destroyed top levels (I and 0)” (Mellaart 1965: 164) of Çatalhöyük East, material that was never published and whose existence has even been questioned (Schoop 2005a: 129). As a consequence, Mellaart concluded that the West Mound formed a direct successor of the East Mound (Mellaart 1965: 154–56, 1975: 15, table 1; Schoop 2005a: 124, fig. 3.6).

French, however, linked the EC I and II of Çatalhöyük West only with a short time span during Mersin-Yumuktepe XXI–XX and consequently argued for a hiatus of a few centuries between the end of the LN occupation at Çatalhöyük East and the beginning of the EC at Çatalhöyük West. While Mellaart and French both agreed that the EC II of Çatalhöyük West, Can Hasan I level 2B and Mersin-

Yumuktepe XXI should be contemporary, French assumed that also the EC I was contemporary with Can Hasan I 2B, a final stage of the EC before the onset of the MC of level 2A of Can Hasan I originally attributed to a transitional phase between the EC and the MC by French. Only levels 2B and 2A at Can Hasan I were radiocarbon dated and resulted in a broad range between ca. 6000 and 5500 cal BC according to modern calibration standards (Thissen 2002). As a consequence, French put the older levels 7 to 3 of Can Hasan I—equating them with Mersin-Yumuktepe XXVII to XXIII—into the LN–EC gap at Çatalhöyük (French 1967; 1998: 65–69; Schoop 2005a: 125, fig. 3.7). Until recently, the latest ^{14}C dates from Çatalhöyük East II at ca. 6200 cal BC, the lack of dates from Can Hasan I levels 7 to 4, and the wide date range of ^{14}C determinations from Can Hasan I 2B spanning the whole first half of the sixth millennium (Thissen 2002) allowed for both Mellaart's and French's views.

At the beginning of the last decade, however, ^{14}C dates retrieved during the renewed excavations at Mersin-Yumuktepe placed levels XXVI and XXV at the beginning of the sixth millennium cal BC (Caneva 1999: 109, table 1; Thissen 2002). Being considerably later than the established end date of Çatalhöyük East at ca. 6200 cal BC, they appeared to be incompatible with Mellaart's chronological model, and, consequently, until recently, textbooks (e.g., Gérard and Thissen 2002; Schoop 2005a) were inclined to follow French's reasoning. Ulf Schoop's (2005a: 129–31) analysis of the ceramic development between the inventories of Çatalhöyük East levels IV to II and the EC I thus diminished connecting traits like the shapes of monochrome pottery and emphasized differences in shapes and decoration of the painted pottery, arguing for a hiatus of ca. 500 years between the two mounds lasting from ca. 6200 and 5700 cal BC (Schoop 2005a: 146, fig. 3.12).

With the renewed excavations at Çatalhöyük under Ian Hodder since 1995 (see most recently Hodder 2014a, 2014b), one of the aims was to resolve these questions about the relationship of the two adjacent mounds and thus complement the stratigraphy of this important type site of Neolithic central Anatolia. Besides several cores drilled into the sediment of and between the two mounds in order to clarify the depositional history of their environment and the extent of their cultural layers (Roberts, Boyer, and Parish 1996; Gibson, Hamilton, and Last 2000), a number of trenches were dug on the West Mound (fig. 1). Between 1998 and 2003, a team led by Catriona Gibson and Jonathan Last excavated Trenches 1 (T1) and 2 (T2) close to the trenches dug by Mellaart (Gibson and Last 2003). An additional trench (T8) was excavated between 2007 and 2012 on the western part of the mound by a team led by Burçin Erdoğan (2012), and from 2006 to 2013, an international West Mound team led by Peter Biehl and Eva Rosenstock opened three trenches on the eastern fringe of the mound (for preliminary reports see the yearly Çatalhöyük Archive Reports as well as Biehl and Rosenstock 2009; Biehl,

Rogasch, and Rosenstock 2012; Willett et al. 2016; Anvari et al. 2017). As the EC remains of Trench 6 (T6) appeared to be heavily disturbed by graves belonging to the historic cemeteries overlying both mounds at Çatalhöyük (Kwiatkowska 2009), excavation concentrated on Trenches 5 (T5) and 7 (T7). In T5, a horizontal excavation strategy was employed to reveal information on settlement structure and socioeconomy, whereas in T7, a deep sounding, aimed at linking the earliest levels of the West Mound to the latest levels of the East Mound excavated by the Poznań Team of Arkadiusz Marciniak and Lech Czerniak in Trench TP (Marciniak, Barański et al. 2015; Marciniak, Asouti et al. 2015).

The dataset that T5 has provided is substantial, with contextual evidence ranging from architecture and depositional history to ceramics, lithics, and bioarchaeology that can be partially complemented with data from T1, T2, and T8. Moreover, relative and absolute chronology places the unearthed occupation phases into a relatively short window of a developed stage of the EC between ca. 5900 and 5800 cal BC (Orton et al. 2018). T7, in contrast, has—due to its sounding character—provided only limited contextual evidence. It yielded, however, relative and absolute chronological markers bridging the chronological gap around ca. 6000 cal BC (Orton et al. 2018). If integrated with knowledge derived from both the developed EC on the West Mound and the LN on the East Mound, T7 can be viewed as an initial stage of the EC and sheds light on the transition between the two mounds as well as the transition from the LN to the EC in Anatolia in general. The evidence suggests that the changes visible between the end of the seventh and the beginning of the sixth millennium are by no means abrupt, but appear as a continuous process in Çatalhöyük and in the Konya Basin. They can be viewed as a logical conclusion of the “Second Neolithic Revolution” (Dürring 2011: 122–25) and can possibly be linked to the “Painted Pottery Revolution” (Nieuwenhuyse 2006) and the rapid climate change of the 8.2 event (Biehl 2012; Clare and Weninger 2015; Biehl and Nieuwenhuyse 2016).

Initial Çatalhöyük West: The T7 Excavations

Although the contextual analysis of the stratigraphy, artifacts, and ecofacts has not yet been completed, some preliminary results can be presented here (see Biehl, Anvari, and Rosenstock forthcoming for final publication). T7 is located at the western bank of a modern irrigation channel cut into the fringe of the mound. The upper part of the trench consisted of deposits heavily disturbed by post-EC activities as well as the channel construction and was dug with the aid of a machine. When substantially preserved architectural features were encountered, excavation was continued manually (fig. 2). The structural remains (fig. 3) of this middle part of the T7 sequence are mud-brick walls of ca. 80 cm width which are arranged in rough east–west and north–south orientation, and a possible room between three



Fig. 2. Overview of deep sounding T7, looking west towards the center of the Çatalhöyük West mound. (Photograph by Jason Quinlan.)

walls with a dimension of ca. 2 m side length. These traits are well in line with the settlement layout as known from T5 with its rectangular buildings made of massive earth walls and internal buttresses, which make for small and compartmentalized interiors. But while buildings in T5 mostly lacked primary contexts, instead containing secondary refuse, four complete pots and an EC miniature vessel on a plaster floor situated at ca. 1001 m ASL in T7 (fig. 4) are more reminiscent of the situation in space 194 in T1 with its internal installations (Gibson and Last 2003). The 2 m of sediment beneath the floor, the lower part of T7, did not display any clear structures, and were excavated in manual arbitrary removals. The character of the deposits (fig. 5) is not entirely clear owing to the sounding conditions of excavation, but might well be indicative of unroofed, but used areas belonging to the settlement featuring a sequence of deposits and surfaces. The alternative would be that these deposits could be downwashed erosive material from older layers located more towards the center of the West Mound, which are now deeply buried below the developed layers. The lowest units, apparently a horizon of natural marl, were subject to human disturbance and pit-digging.

Insofar as the sample size and the ongoing analyses permit conclusions, the quantity and fragmentation level of the pottery, as well as the ratio of diagnostic vs. undiagnostic sherds in the middle parts of T7, is comparable to that of the developed EC of T5, T6, and T8. Here, a mean density of pottery per excavation volume of as much as 8 g/l was estimated. Large sherd fragments with only lim-

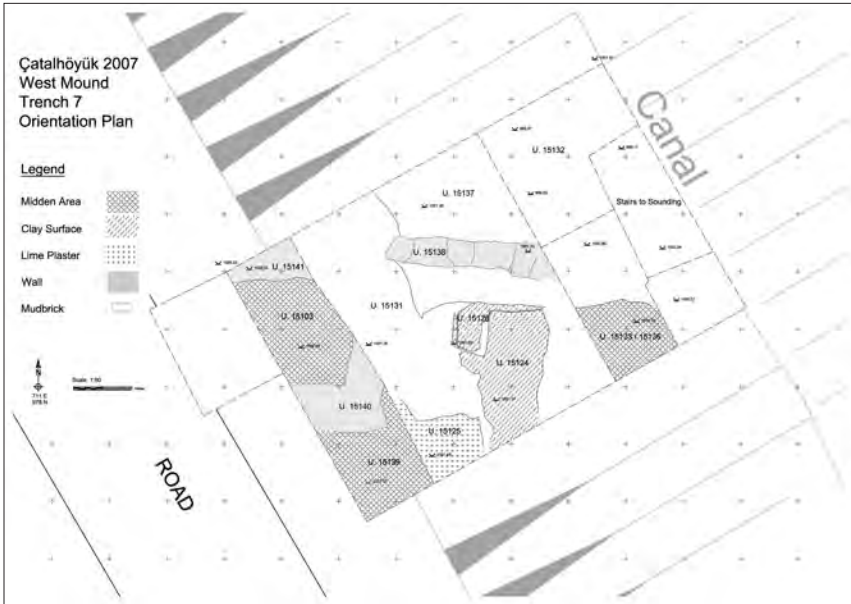


Fig. 3. Architectural remains in the middle part of the T7 sequence. (Drawing by Frank Stremke.)

ited traces of edge wear hint at a rapid depositional history in the buildings, and approximately three-quarters of the pottery is painted. In the lower part of the sequence in T7, however, sherd size decreases and points to differing taphonomic histories. Moreover, in the lower part, the proportion of painted vs. unpainted pottery is smaller (fig. 6; Biehl et al. 2012: 60; cf. Biehl and Rosenstock 2009: 476). Most notably, besides one example from an insecure context (U.15101), two sherds with incised spiraloid decoration stem from contexts (U.15115, U.15129) within the lower part of the T7 sequence. Although the low number of 498 pieces of chipped stone (fig. 7) retrieved from the lower and middle levels of T7 calls for treating conclusions with some caution, some observations are possible when comparing the two parts. In general, the material from T7 is very similar to that from T5, with obsidian representing 95 percent of the assemblage. Some differences, however, have to be noted: the deepest levels of the sounding contained only three pieces of nonobsidian raw materials, comprising 1 percent, whereas the middle units, in contrast, yielded 7 percent nonobsidian raw materials such as flint, jasper, chalcedony, and partially silicified limestone. The most notable difference between the two parts of the sequence is the ratio of pressure blades vs. percussion blades, which is 11.7:1 in the deeper levels and thus much larger than in the intermediary levels, where a ratio of 1.4:1 prevails (Ostaptchouk 2012). Animal bones from T7 have yet to be studied in detail, but preliminary scanning of the material suggests a different depositional history to



Fig. 4. Complete vessels in the middle part of the T7 sequence. (Photograph by Jason Quinlan.)

that seen in the developed EC of T5. Bones are much more rarely articulated and in poorer condition overall, suggesting that the majority are to some extent disturbed or redeposited. There is a low density of charred plant remains within the T7 assemblage, but the preliminary scanning of the assemblage suggests that, as in T5, domestic waste was the source of the material: processing wastes from cereals, notably glume bases, along with nutshells and arable weeds indicate the remains of domestic rubbish disposed of into fires.

A program of radiocarbon dating using samples from T5 and T7 was performed to date the occupation on the West Mound. A total of sixteen new dates from these two trenches can be combined with two existing dates from cores drilled into the West Mound (Göktürk et al. 2002) and eighteen existing dates from T1 and T2 (Higham et al. 2007), while an earlier set of samples from T7—some of which gave implausible dates (Biehl et al. 2012)—are now known to have been based on “collagen” with problematic C:N ratios. The new dates are mod-



Fig. 5. North profile of the lower part of the T7 deep sounding. (Photograph by Jason Quinlan.)

eled and discussed in detail elsewhere (Orton et al. 2018) but are summarized here. First, samples from T5—all on articulated bone—cluster tightly between ca. 5900 and 5800 cal BC or perhaps slightly earlier, serving as an anchor with secure contexts at a floor level of ca. 1004.00 m ASL and on top of ca. 4 m of sediment as known from coring (Gibson, Hamilton, and Last 2000). Second, a sequence of samples from T7 gave a range of dates between ca. 6200–6050 and ca. 5700–5650 cal BC. Third, the dates from T1 and T2 (Higham et al. 2007) suggest that occupation on the West Mound continued until ca. 5600–5500 cal BC. The period between ca. 6200 and 5500 cal BC, hence, appears a plausible date range for the entire duration of the Çatalhöyük West Mound (Orton et al. 2018).

On the East Mound, the TP trench dates the abandonment of this part of the settlement to ca. 6000–5900 cal BC (Marciniak, Barański et al. 2015), without even taking into account the possibility of erosion of some part of the final prehistoric stratigraphy (Boyer, Roberts, and Baird 2006). Taken together, the ^{14}C results from the East and West Mound strongly suggest a period of overlap between the two mounds of at least fifty years around ca. 6000 cal. BC, with one to two centuries in our view more likely. Occupation at the western fringe of the East Mound in the Istanbul (IST) Area dating to ca. levels IV to II or Q to S respectively (Özbaşaran and Duru 2014) at a much lower level than those in the S Area indicates that during the seventh millennium, the mound of Çatalhöyük underwent shifts of its settlement focus as suggested by Last (1996) besides a process of contraction towards the S eminence (Tringham and Stevanovic 2012; Farid 2014; Marciniak and Czerniak 2014). Hence, we could view the gradual replacement of

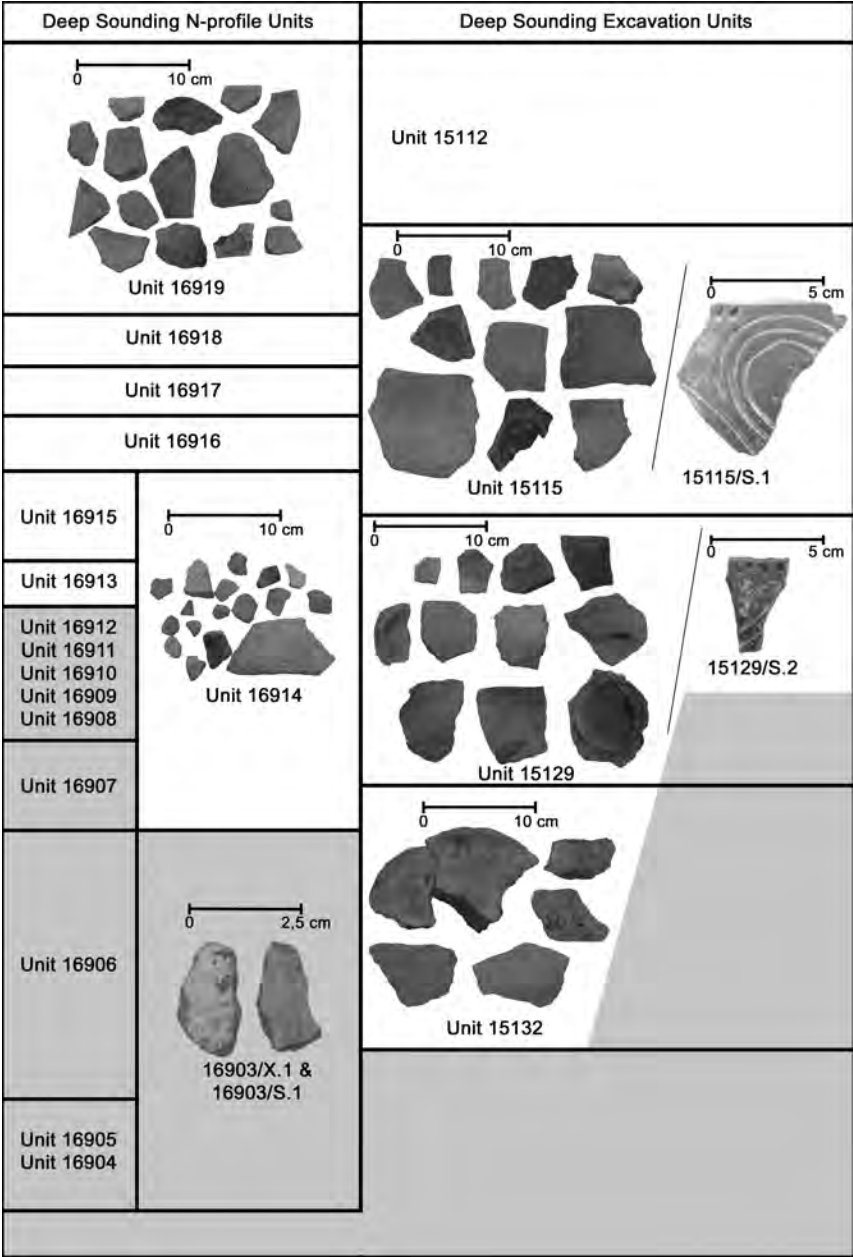


Fig. 6. Ceramic finds from the deep sounding T7. (Illustration prepared by Ingmar Franz.)

the East Mound by the West Mound settlement as yet another such shift. The fact that what was later to become Çatalhöyük West was separated from the original site by a previously unsettled area and the riverbed (Roberts, Boyer, and Parish

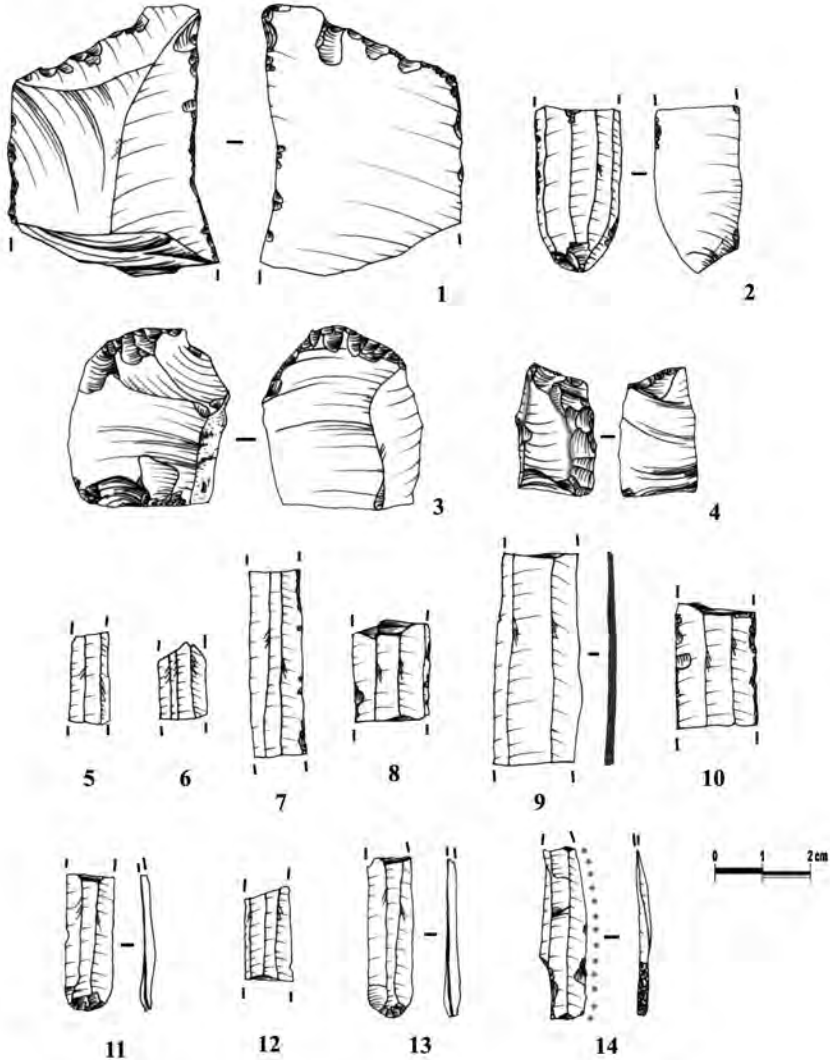


Fig. 7. Chipped stone finds from the deep sounding T7. (Illustration prepared by Sonia Ostaptchouk.) 1996), however, makes it more than a small shift. On the other hand, the shift took place within the original catchment area of the site, and hence cannot be regarded as a completely new foundation. Detailed analyses of the architecture and finds from both TP and the West Mound trenches is still ongoing and renders our results preliminary, but the following account of the material record of the late seventh and early sixth millennia at Çatalhöyük shows that within continuities rooted in traditions of the site, change is present throughout the sequence and might bear a clue to the relationship of the two mounds at Çatalhöyük at ca. 6000 cal BC.

The Late Seventh–Early Sixth Millennia Sequence at Çatalhöyük

After the start of the settlement at Çatalhöyük at ca. 7100 cal BC in the Aceramic Neolithic (AN) of the pre-XII levels (Bayliss et al. 2015; cf. Cessford 2001) and the introduction of ceramics at ca. 7000 cal BC, Mellaart's level VIAB, or level O/N in the new phasing system (Farid 2008: 20; Hodder 2014b, table 1), marks the peak and end of what can be termed the “classic” EN settlement in the middle of the seventh millennium. In a recent attempt, Marciniak and Czerniak (2014) have proposed to replace the notoriously vague criterion of the first occurrence of ceramic decoration (French 1967: 175, chart 2; Mellaart 1965: 155; 1975: 15, table 1; Schoop 2005a: 125, 107) by socioeconomic criteria, and hence redefine the Anatolian LN as starting with the change at Çatalhöyük level P (most recently Hodder 2013) dated to ca. 6450 cal. BC, hence roughly coinciding with the Middle-Late Neolithic of ca. 6500–6200 cal BC proposed for western Anatolia by Eylem Özdoğan (2015).

Çatalhöyük East level Mellaart V/Hodder P witnesses abandonment of the strict building superposition and dense agglomeration in neighbourhoods of the classic Çatalhöyük East levels towards more fluctuating building layouts and more open space adjacent to buildings (Düring 2001; Hodder 2013: 22) visible in the S area up to level Mellaart I/Hodder T (Mellaart 1967; Farid 2014) and in the TP trench where, moreover, buildings and open spaces alternate on the same spot through time (Czerniak and Marciniak 2008: 75, fig. 54; Marciniak, Asouti et al. 2015). The sequence there starts sometime before ca. 6350 cal BC (Marciniak, Barański et al. 2015), hence roughly contemporary with levels Mellaart IV or III/Hodder Q or R (Cessford 2001; Özdöl-Kutlu et al. 2015). From ca. 6200 cal BC, the construction and use of two so far unparalleled chambers with collective burials mark the beginning of a second phase within the LN (Marciniak and Czerniak 2014) lasting until the abandonment of the Çatalhöyük East Mound ca. 6000–5900 cal BC (Marciniak, Barański et al. 2015). This phase, coinciding with the new definition of the Late Neolithic for western Anatolia ca. 6200–5900 cal BC (Özdoğan 2015) is not yet finally connected to the Mellaart and South phasing (Marciniak et al. 2017) and probably corresponds to the poorly published Mellaart levels I and 0.

Interestingly, T5 shows the agglomerating settlement pattern reappearing, and—given the absence of open spaces in all trenches excavated (T1, T5, and T8)—in an even more rigid way than before (fig. 8). Earth buttresses are found occasionally in upper levels on the East Mound—such as, for example, in B. 65 in South level IV/Q or B. 74 in TP dating to ca. 6300 cal BC (Czerniak and Marciniak 2008: 74; Farid 2008: 20; Regan, Sadarangani, and Taylor 2008: 65–66; Marciniak, Barański et al. 2015)—as features for stabilizing walls and structuring internal space, but only in the developed EC do they become a regular feature.

2013 Excavation Plan: Catalhöyük West Mound Trench 5

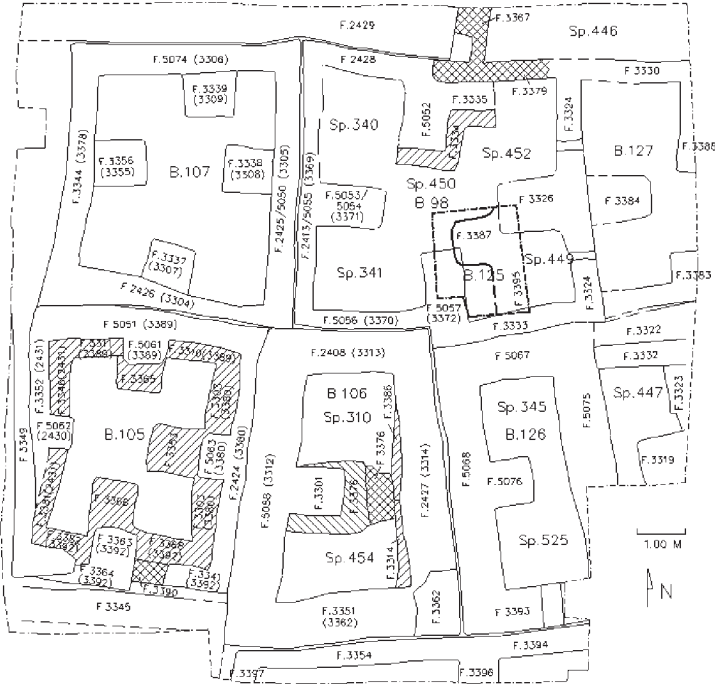


Fig. 8. Architectural remains in T5. (Illustration conceived by Jana Anvari; plan designed by Patrick Willett, Buffalo.)

Buttressed buildings required only smaller pieces of wood for ceiling and roof construction on the West Mound, thus forming a logical continuation of timber-diminishment in construction. Moreover, the composition of the construction material used for the earthen walls seems to have changed, with EC walls in T5 having a more grayish color and higher silt content than the reddish and sandy bricks used in, for example, the TP (Marciniak et al. 2013: 79) and North Area (see, e.g., Tung 2013: 29) on the East Mound. Also, ways of forming and laying bricks had changed, with T5 buildings showing a larger variety of earth building techniques (Biehl, Rogasch, and Rosenstock 2011: 46) than documented on the upper East Mound.

At the other end of buildings' lives, the elaborate abandonment rituals that transformed the classic East Mound buildings into parts of the sphere of memory and ancestors (Cessford and Near 2005; Matthews 2005) were on the West Mound replaced by a more practical approach that is reminiscent of the use of outdoor areas on the East Mound: the fills within the abandoned houses were

undisturbed and show a strong secondary and tertiary character. They appear highly mixed and yielded a large number and variety of inclusions, among which the artifact and ecofacts were very well preserved and point to a rapid deposition, most likely as rubbish material, but possibly also for production and short-term storage (Biehl, Rogasch, and Rosenstock 2012b). The same appears true for the role of houses as burial sites: around level V/P, burial inside domestic buildings ceases and does not reappear in Çatalhöyük with the exception of the two apparently special burial chambers in TP and two neonates deposited in the fill of Building 105 of T5.

As suggested by the presumably collapsed second floor of B. 78 in T8 (Erdoğan 2008), the buttresses on the West Mound most likely carried second stories that could have housed the installations that were regular features in East Mound houses but seem so far to be missing from the excavated parts of West Mound houses. The only installations found in T5 were a few smaller features on the floor of Building 98 (B. 98) that can be associated with food storage or preparation, but hearths or ovens are notably lacking in T5. Adding a second story to the house on the one hand seems like a continuation of the development noted on the later East Mound, when buildings started to become larger and more complexly structured (Hodder 2014b: 22). On the other hand, two-storied buildings make for a new and clear separation of living space and storage space and also increase storage space considerably while the overall building area of ca. 25–30 m² would have remained roughly the same. Towards the end of the occupation at Çatalhöyük West, excavation at T1 (Mellaart 1965; Gibson and Last 2003) closer to the summit of the mound have yielded evidence for a breakup of the strict layout and storage function of the buildings, such as hearths on the ground floors of buildings, bins, and vessels in primary context.

An emphasis of household storage capacity is not only visible in the buildings, but also in the ceramic assemblage of the EC: large storage vessels (fig. 4) are so far only known from the West Mound sequence. Their appearance coincides with a proliferation of sheer ceramic quantity and a drastic increase in the proportion of decorated pottery. According to preliminary calculations, the mean density of pottery per excavation volume is only 0.1 to 0.2 g/l in the excavation areas of the East Mound (Tarkan, personal communication; Willett et al. 2016), and pottery discard during the EC increased by a factor of about fifty. The ubiquity of painted pottery in even in the deep layers of T7 is a hint that the high percentage of painted pottery was already a characteristic of the West Mound in its beginnings, whereas decoration was a rarity on the East Mound. First decorations in form of incised lines and zoomorphic and anthropomorphic appliques appear on East Mound pottery from South Level V/P onwards, and red slips and painted red lines appear even later, for instance in level III (Schoop 2005a: 107), the post-V/P levels of the IST area, in TP level P, and the KOPAL trench dated to

ca. 6200/6100 BC (Franz and Pyzel 2016; Yalman, Özbudak, and Gültekin 2013; Özdöl-Kutlu et al. 2015: 188).

Regarding the raw materials that appear to stem from the local Çarşamba River fan or paleo-lake sediments, a very distinct change is visible at level VI/N and O when “Dark Line” fabric replaces the “Light Line” clay tempered with organic matter common in the EN layers. Throughout the later levels of the East Mound, Light Line—but unlike in the EN without any temper—fabrics are used again along with the Dark Line fabrics in growing proportions (Özdöl-Kutlu et al. 2015: 183–84). While mostly deep hole-mouth jars were made from Dark Line fabric, the Light Line group correlates with different bowl shapes common from level IV/Q onwards (Franz and Pyzel 2016). Starting from level V/P onwards, so called “S-profiles” appear on vessels, which turn into more elaborate necked-vessel forms in the West Mound pottery assemblage.

Finally, in the West Mound, Light Line is almost exclusively used, with its beige color forming a contrasting backdrop to the reddish paint. Open bowls, more closed vessels with wide necks, and jugs with handles all painted with red geometric lattice patterns, prevail, although sometimes incised decorations and appliqués are also observable (fig. 9). Bowls are sometimes painted on the inside as well with patterns that differ from the outside, a remarkable fact given that the pattern would only be visible while the vessel was still (or again) empty. Undecorated two-lugged cooking pots are increasingly made of Light Line fabric too, and also exhibit new shapes with wide orifices, S-profiles, and ellipsoid circumferences. This goes along with the appearance of so called “pot stands” or “fire dogs,” thus suggesting a change in cooking techniques from level V/P onwards, when both clay balls, interpreted as devices for heating liquid and semiliquid food, and baskets as the concomitant containers, disappear (Atalay 2005; Thissen et al. 2010: 161; Franz 2012).

The first variants of pot stands are undecorated and support the still egg-shaped cooking pots from two or three sides to prevent them from falling over. The adoption of direct cooking in pots set in a fire or embers allows for a steady temperature over a long time, a prerequisite for the detoxification of pulses in particular and for the manufacture of milk products (Thissen et al. 2010), and hence fits well with the evidence for milk and new crops after V/P outlined below. West Mound pot stands are often decorated with incised geometric patterns similar to the decoration on pottery, and support the cooking pots from below, which allows cooking directly over a flame (Franz 2012; Franz and Pyzel 2016). The consequence is that the cooking pots made from Light Line fabrics are not directly in contact with the fire or embers anymore as the egg-shaped cooking pots made from Dark Line fabrics used to be, indicating a change in cooking habits going along with the growing importance of prepared food visible in the

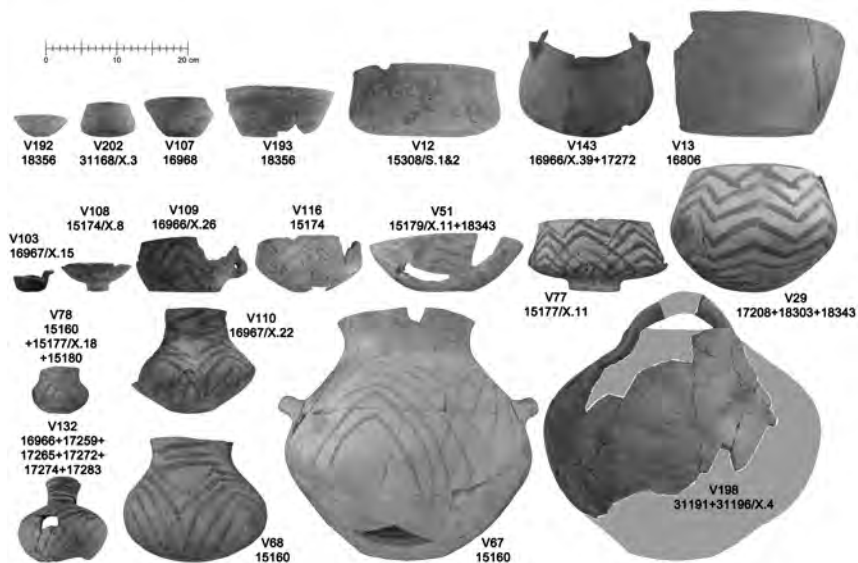


Fig. 9. Ceramic finds from T5. (Illustration prepared by Ingmar Franz.)

ceramic spectrum that appears geared towards serving, display, consumption, and sharing of meals.

The increase in ceramic production is not matched by lithics (Ostaptchouk 2012, 2014): while Cessford and Carter (2005) estimated the annual consumption of obsidian for the Neolithic East Mound to ca. 100–300 kg, the West Mound values suggest a decrease by the factor 2 to 4. Obsidian was imported from the two Cappadocian sources Nenezi and Göllü Dağ in equal proportions. The absence of production refuse from key production phases demonstrates that the material was brought to the site as preformed cores or blades. The obsidian assemblage is dominated by tools—mainly splintered pieces and retouched blades—as well as used unretouched blades mainly produced in the unipolar laminar technique (besides a few instances of bipolar technique). These characteristics point to a regional production by specialists.

Locally available chert types are of poor knapping quality, and the mineralogy of these raw materials is quite diverse, displaying an opportunist procurement probably during other activities performed outside of the settlement. It seems that stone for chipping was procured less often than on the East Mound, but in contrast was often recycled and reused. The development of the obsidian proportions follows a similar trajectory to the ceramic wares: after a period of decreasing proportions of Göllü Dağ obsidian during the classic levels of the East Mound, Nenezi Dağ obsidian reaches ca. 70 percent in levels Mellaart V/Hodder P to

III/R and during the TP occupation (Özdöl-Kutlu et al. 2015: 188). Interestingly, the two Cappadocian sources are exploited in almost similar proportions in the lower levels of T7 and in T5. T1, with a proportion of ca. 70 percent of Göllü Dağ raw material appears as a continuation of this trend. The use of local poor-quality flint for domestic casual purposes, however, is observed already in TP.

Taken together, these findings may indicate the abandonment of the classic mode of raw nodule procurement and on-site specialist production by a more casual procurement and production in the surroundings of Çatalhöyük. The main technical changes in the chipped stone production, that is, the shift from flakes to unipolar and bipolar blade production, also happened around level VIB/N (Özdöl-Kutlu et al. 2015: 188), and lithic production from a qualitative perspective appears to be quite homogeneous during the later East Mound and West Mound: laminar unipolar production prevails, the blades and their products have a roughly constant size, and the same preparation of the butt can be observed. The same is true for the consumption of ready-made cores or blades.

Some exceptions, however, have to be noted. Pressure blades, the main tradition in the late East Mound levels (Özdöl-Kutlu et al. 2015: 188), are very frequent in the deep levels of T7 and then have ratios of 2.6:1 in T5 and 4:1 in T1. The almost complete lack of bipolar blades during the EC can, according to Carter et al. (2006: 256), be correlated with the impoverishment of arrowheads in both quality and quantity: while a diversity of types exists in the classic and later level of Çatalhöyük East, only one type is known in the West Mound. It, moreover, exhibits wear indicating use as a drill or perforator, which can be interpreted as a result of recycling or can even suggest that this type of tool was not used as an arrowhead at all. And while flint blades with glossy edges form a steady component of the toolkit at Çatalhöyük, a square blade-based type of tool made from nonlocal, probably eastern Anatolian, flint (fig. 10) and used for cutting cereals or other plants, judging from the glossy surface on the cutting edge, is exclusive to the toolkit of the West Mound. Both findings could be interpreted as signs of a decline of the relative importance of hunting with a concomitant increase in plant production.

From the zooarchaeological point of view, however, hunting starts to lose relevance already from level V/P onwards, when the frequency of equids declines sharply and the role of wild cattle diminishes. This decline is accompanied by the appearance of the first definitely domesticated cattle and an increasing importance of sheep and goat (Russell et al. 2013b). Interestingly, aurochs symbolism as manifested in architectural installations and special deposits appears to continue or even intensify after the appearance of morphologically domestic cattle on the East Mound, at least initially (Russell et al. 2013a: 63), but is not apparent on the West Mound. The overall number of cattle, both wild and domestic, however, remain much lower after level V/P than before, a trend also further observable

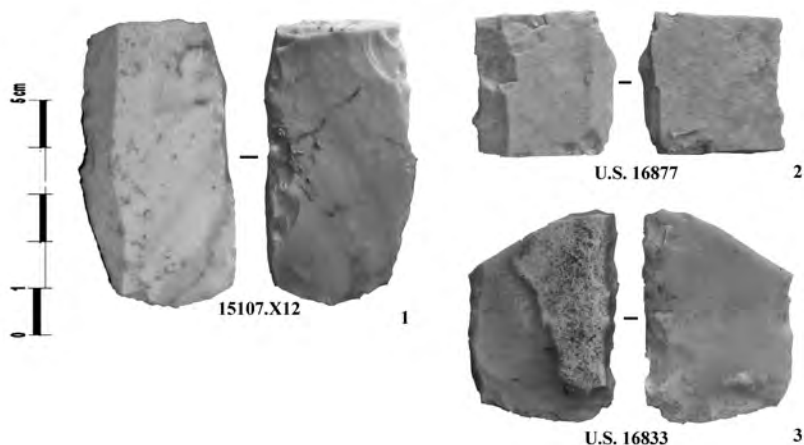


Fig. 10. Chipped stone finds from T5. (Illustration prepared by Sonia Ostaptchouk.)

on the taxonomic composition of the West Mound data from T1 (Gibson et al. 2004) and T5 (Orton 2013) with the exception of a small increase in wild equid remains—ca. 3 percent of fragments—compared to the later levels on the East Mound: the EC fauna are overwhelmingly domestic, with sheep and goat making up almost 95 percent of the bone finds. Cattle—of which the majority is probably domestic—contribute less than 3 percent, while domestic pigs are absent. A combination of metrical and epiphyseal fusion data (Russell et al. 2013a), along with preliminary mandibular aging, suggest that the transition to the West Mound saw a shift in how caprine herds were managed—and possibly even the introduction of new, larger stock.

This heavy focus on sheep and goat herding may be mirrored by the, albeit limited, evidence from T5 for symbolic treatment of animals in form of two apparently carefully prepared pairs of horns with connecting frontal bone, one pair each from domestic sheep and goat (Orton 2011). Perhaps surprisingly in the light of sheep, goat, and cattle dairy proteins detected in vessels from T5 (Hendy et al. 2018) and earlier lipid evidence from the East Mound (Evershed et al. 2008; cf. Roffet-Salque et al. 2018), this appears to be a change further away from an optimal milk production model, with a larger number of males being kept alive to subadulthood than previously. One speculative possibility is that herds were smaller—or organized into smaller units—and hence managed more conservatively to ensure herd security. The bone finds were often encountered in articulation, thus offering another hint to a rapid primary deposition of the find assemblage within the buildings. Moreover, coupled with the generally low degree of predepositional breaks, this can be considered evidence of relatively wasteful consumption practices.

The majority of plant macroremains from the building infills consists of parts from cereals, pulses, and weed taxa. Chaff remains form the majority of the economic assemblage, whereas cereal grains and pulse seeds occur less frequently. Such a finds spectrum can be interpreted as the remains of crop-processing waste, a finding well in line with the interpretation of the deposits as rubbish. The inventories from the West Mound demonstrate the continuation of changes started on the East mound: pulse taxa show a change from high lentil and bitter vetch finds in the EN to assemblages dominated by pea and lentil in the LN/EC (Bogaard et al. 2017). A continued trend of high abundance of “new type” wheat glume bases is seen, and hulled barley is observed complementing and then overtaking the EN naked barley by the EC (Bogaard et al. 2017; Stroud 2013). Possible reasons for the change to hulled barley range from drought tolerance, insect resistance, and use as animal feed to changes in culinary use. Wild mustard is still prevalent within the West Mound assemblage along with wild nuts such as pistachio and wild almond/plum.

The Late Seventh and Early Sixth Millennia at Çatalhöyük in Their Central Anatolian Context

Despite the numerous LN and EC sites known in Anatolia (fig. 11), only a few sites have been excavated in the Konya Basin and beyond. As in these regions, moreover, research has often followed other questions and other strategies than at Çatalhöyük. Hence, fitting this Çatalhöyük-based scenario of the transition between the seventh and the sixth millennia into a wider framework (see also Özdöl-Kutlu et al. 2015) can only partially succeed.

The most striking parallel to the findings from T5 comes from layers 2B and 2A at Can Hasan I. The agglomerating settlement structure, the similar layout and dimensions of the buildings with internal buttresses and evidence for second storeys as well as the apparent lack of primary contexts of the finds and the prevalence of painted pottery of open vessel shapes (French 1998, 2005) is closely mirrored by Çatalhöyük West T5. Moreover, as in Çatalhöyük West T1, Can Hasan I 2A displays a renunciation of the strict settlement pattern towards the end of the occupation. Red patterns of dot-filled rhomboids connected by lattices of lines painted on wall plaster found in Can Hasan I 2B likely stem from upper storeys (French 1962: pl. II). They have their counterpart on the inside of a ceramic vessel, albeit not in a painted but in an incised version (French 2005: fig. 015.8). This raises the idea that EC households could have been identified by the same pattern used on both their wall interiors and pots, adding another perspective to the idea of sharing as a socioeconomic strategy. In the light of the new absolute dating of the EC at Çatalhöyük West, the similarities of the pottery inventory to the EC at Çatalhöyük West (Schoop 2005a; French 2005) and imports of Çatalhöyük West

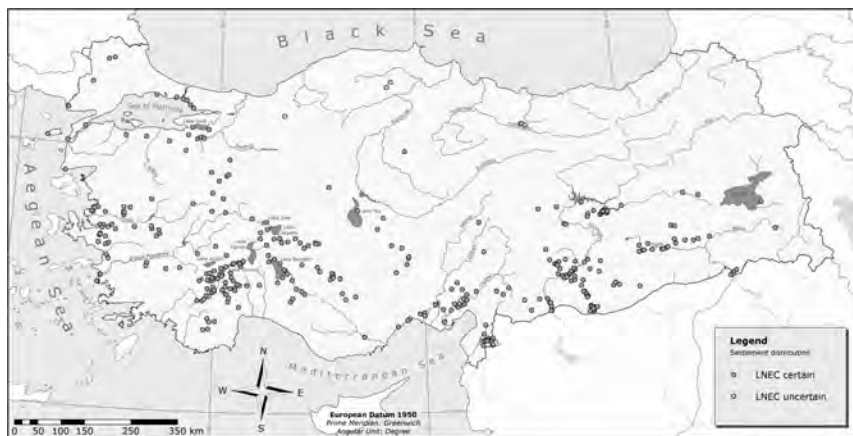


Fig. 11. LN and EC sites in Turkey. (Illustration conceived by Eva Rosenstock; cartography by Daniela Kelm, Berlin. For site references see Rosenstock 2014.)

pottery in Can Hasan (French 2005: 27) give us reason to accept a more narrow time frame around 5800 cal BC for Can Hasan I 2B and 2A.

Similar massive walls, buttresses, and no internal features are also visible in level 3, for which unfortunately no ceramic material is recorded (French 2005: 18). Levels 4 and below, in contrast, show thinner walls and an irregular spacing of buildings and installations such as bins more comparable with what is known from the post-V/P levels of the Çatalhöyük East Mound. The occurrence of hulled barley alongside naked barley (Renfrew 1968) fits observations in LN Çatalhöyük. Also the lack of painted ceramics in these layers as well as the occurring dark burnished fabric and overall shapes—mainly hole-mouth bowls—could be in line with what is known from the latest layers preserved at Çatalhöyük East.

Given the 2 m of walls superimposed onto each other from Level 7 onwards, an uninterrupted occupation is highly likely, and assuming a date of ca. 5900–5700 cal BC for level 2B, levels 4 and 3 at Can Hasan can be regarded as contemporary with the shift between the two mounds at Çatalhöyük (Schoop 2005a: 146; cf. Thissen 2002: 19). Besides Can Hasan I 7–4, a number of other sites showing a pot inventory similar to the late seventh millennium at Çatalhöyük are known from surveys in the Konya Basin (Harmankaya, Tanındı, and Özbaşaran 1997; Gérard 2002). Their existence indicates that the broadening of subsistence strategies visible at Çatalhöyük V/P was able to carry the Neolithic way of life into an area previously void of AN and EN sites (Rosenstock 2014, in press) and stands in contrast to the absence of such late seventh millennium sites from the direct surroundings of Çatalhöyük (Baird 2002).

Subsequently however, sites with painted ceramics sprouted in the whole Konya Basin and also in the vicinity of Çatalhöyük (Harmankaya, Tanındı, and

Özbaşaran 1998; Baird 2002; Gérard 2002). As earlier and later versions of red design can hardly be distinguished in survey material, an absolute date for this site proliferation is hard to pinpoint: judging from Can Hasan I and Mersin-Yumuktepe (see below), it would be ca. 6000 cal BC or even later, but judging from Çatalhöyük, it is also possible that at least some of the sites classified as EC in the Konya Basin have their roots in the late seventh millennium.

Interestingly, shortly after 6000 cal. BC, the pollen profile from Eski Acıgöl shows signs of intensified crop cultivation and forest degradation well in line with this EC site proliferation and indicators for timber sparseness in the EC of Çatalhöyük West and Can Hasan. A concomitant increase of nutrients in the lake (Woldring and Bottema 2001; Woldring 2002) may point to eutrophication as a common consequence of intensive land use in both plant cultivation and animal husbandry and/or effects of the 8.2 climatic event in central Anatolia (see also Willett et al. 2016).

The incised sherds from T7 are attributable to the Gelveri ceramic style of Cappadocia (Schoop 2005a: 134–36; Franz 2008). The high content of vegetal temper in their fabric is an unusual trait in the LN and EC assemblage of Çatalhöyük, but characteristic for the type site of Gelveri (Godon and Özbudak 2016) and makes it likely that the pieces from Çatalhöyük are imports rather than local variants. Their appearance in the earliest layers of the West Mound supports Ulf Schoop's (2005a: 146; see Iso Düring 2011: 155) notion that part of the assemblage at Gelveri (Gülçur and Kiper 2009) should be placed around 6000 cal BC.

Given that the workshop at Bozköy on the western slopes of Göllü Dağ yielded mainly unipolar cores (Balkan-Atlı and Binder 2012: 72), it is hard to say if obsidian for Çatalhöyük West was procured by sending out people who prepared the cores or even blades at the obsidian outcrop or by exchange with communities in Cappadocia who performed these tasks. The lack of red-on-white painted pottery imports at Gelveri and the other two contemporaneous Cappadocian sites of Tepecik-Çiftlik and Köşk Höyük (Bıçakçı, Godon, and Çakan 2012; Öztan 2012) and the presence of Gelveri imports at Çatalhöyük West, however, makes the latter scenario more likely.

Such an outsourcing of blade production also fits more the general picture of more lithic consumption in Çatalhöyük West and is well in line with similar general trends in the Near East around and after 6000 cal BC (Thomalsky 2012: 308–10). The idea that the distinct relief-decorated pottery of Tepecik-Çiftlik and Köşk Höyük is heir to the mural art from Çatalhöyük East (Bıçakçı, Godon, and Çakan 2012: 104; cf. Düring 2011: 154) could add an interesting touch to the otherwise unidirectional flows of influences between Cappadocia and the Konya Basin in the late seventh and early sixth millennia.

The ceramic spectrum at Mersin-Yumuktepe in the Cilician plain and hence at an interaction zone between the Konya Basin, the Mediterranean coastal

area, and Upper Mesopotamia, shows S-profiles and necked vessels similar to the TP material at Çatalhöyük East and T5 at Çatalhöyük West in Levels XXVII to XXVI, whereas red-painted pottery first appears in Mersin-Yumuktepe Level XXV dated to ca. 5900–5700 cal BC (Caneva 1999; Thissen 2002) and hence later than at Çatalhöyük and Can Hasan. Up to Level XX, similarities to the EC I at Çatalhöyük West are clearly visible (Schoop 2005a: 128–30).

While the appearance of Halaf imports in Yumuktepe from Level XIX onwards and imports of southeast Anatolian squarish flint blades at Çatalhöyük T5 point to contacts to Upper Mesopotamia by ca. 5800 cal BC, the relationship between the earlier developments at Yumuktepe and the painted proto-Hassuna and later sequence from 6400 cal BC onwards (Nishiaki and Le Mièvre 2005) must be investigated before the developments in the Konya Basin can be linked to Upper Mesopotamia where changes in storage habits can be observed (Bartl 2004). Moreover, the proliferation of painted ceramics and open vessel shapes geared towards sharing of food that has led Oliver Nieuwenhuyse (2006) to coin the term “Painted Pottery Revolution” in Upper Mesopotamia ca. 6100 cal BC to 5900 cal BC is another synchronous phenomenon in both regions. Shifts within mounds and between neighbouring mounds only a few hundred meters apart, are also known from Hassuna (Lloyd 1963: 71) and Sabi Abyad (Akkermans 1996) in the late seventh and early sixth millennium.

Further west in Anatolia, the developments in the Lakes District share many traits with the Konya Basin. At the middle of the seventh millennium, at the onset of what has recently been defined as Middle–Late Neolithic in western Anatolia (Özdoğan 2015), Bademağacı 4 witnessed a change from light-colored pottery in simple shapes towards darker fabrics, a more diverse pot spectrum and the occasional occurrence of painted pottery that is highly reminiscent of and contemporaneous with the developments at Çatalhöyük V/P (Schoop 2005a: 180; Thissen et al. 2010; Duru 2012). Hacılar IX–VI is one of many newly founded sites in the region (Gérard 2002; Harmankaya, Tanındı, and Özbaşaran 1997).

The buildings of this period, known from Bademağacı 3 and 2 and Hacılar VI (Mellaart 1970), have installations such as ovens and bins. The redefined Late Neolithic is not so clearly separable from the preceding and subsequent periods in the Lakes District due to stratigraphical uncertainties (Thissen et al. 2010; Rosenstock 2010), but could be represented by the LN 1–2 levels of Bademağacı (Özdoğan 2015). Accompanied by yet another proliferation of sites (Harmankaya, Tanındı, and Özbaşaran 1998; Gérard 2002), the EC of the Lakes District shares many characteristics with that of the Konya Basin: high proportions of painted ceramics with a preponderance of open shapes are accompanied by the characteristic massive agglomerating architecture with internal buttresses and absent internal features and an apparent lack of primary finds contexts in Kuruçay 7 (Duru 1994) and Hacılar I (Mellaart 1970). Although similarities between the

ceramics of Hacilar I and the EC I of Çatalhöyük West (Schoop 2005a: 194–96) are present, stratigraphic problems in Kuruçay and Hacilar (Rosenstock 2010; Thissen et al. 2010: 274), as well as the yet unpublished detailed ceramic sequence of Bademağacı, allow only for broad date ranges of ca. 6400–6100 cal BC for the LN and ca. 6100–5700 cal BC for the EC (Thissen 2010) in the Lakes District.

New socioeconomic traits in the seventh millennium BC are geared towards a more intensive production and consumption and have been termed the “Second Neolithic Revolution” by Bleda Düring (2011: 122–25). Although they most likely enabled the Neolithic way of life to expand into southeastern Europe and beyond, the spatio-temporal dynamics of their spread is more complex than a simple westward-moving “package” scenario: cattle husbandry predates the diversification of the ceramic spectrum at Mersin-Yumuktepe, Bademağacı, and Ulucak along the Mediterranean and Aegean coast by a few centuries, but the two traits coincide at Çatalhöyük East (Arbuckle et al. 2014) and are accompanied by a more varied plant food spectrum.

Moreover, here and in the Marmara Region, the introduction of domestic cattle is contemporary with the initial use of milk products (Evershed et al. 2008). At Bademağacı and Hacilar, first painted pottery appears in layers dated to ca. 6400–6200/6100 cal BC (Schoop 2005a: 155–71; Thissen 2010), hence the first painted ceramics within the LN the Lakes District could be as early as in Upper Mesopotamia. While the evidence from Çatalhöyük suggests first erratic painted ceramics from ca. 6200 cal BC for the Konya basin, they regularly occur at Çatalhöyük and Can Hasan I only after ca. 6100 cal BC, as in Cilicia.

The occurrence of similar socioeconomic phenomena of the Second Neolithic Revolution in neighboring regions suggests dispersals and interactions around 6000 cal BC, whereas the stratigraphic and architectural continuity from the LN to the EC seen, for example, at Can Hasan I suggests that the EC is an internal development out of the LN of the Konya Basin. In this area of tension, the rapid climate change peaking ca. 6200–6000 cal BC is currently debated as a possible shared external trigger (Weninger et al. 2009; Biehl 2012; Clare and Weninger 2015; but cf. Asouti 2009). A more detailed analysis of the available nonarchaeological proxy data for its effects in central Anatolia is still lacking, but first evaluations indeed suggest an episode of drier conditions (Roberts 2014; Dean et al. 2015; Willett et al. 2016; Roffet-Salque et al. 2018). This, in turn, might have also influenced the water regime.

Çatalhöyük at ca. 6000 cal BC: Two Communities Side by Side?

One question to investigate after the detailed assessment of the lower levels of the West Mound has been completed is to scrutinize the coexistence of the two settlement foci at Çatalhöyük between ca. 6100/6000 and 5900 cal BC. Some

of the hypotheses that need to be tested with a multiscalar approach include (1) whether the Çarşamba River output or course change during that time (Willett et al. 2016), causing the community to move closer to the water sources; (2) whether the settlements on the East and West Mounds belong to two parts of a community or even two communities following different socioeconomic strategies; and (3) were the East and West Mounds used by a single community and did they have specific functions within its socioeconomic system?

In this context, it has to be noted that—although we cannot say much about the exact extent of the West Mound settlement between ca. 6100/6000 and 5900 cal BC—even a conservative appraisal of the deep layers from T7 suggests that it covered a much larger area than the small settlement on the East mound during that time (Kuijt and Marciniak 2014). While it has to be kept in mind that the character of the regular buildings in the TP excavations on the East Mound appears domestic (Marciniak, Asouti et al. 2015), the emphasis on burial apparent after ca. 6200 cal BC and the lack of burials on the West Mound make a function of the East Mound as a site dedicated to ritual on the ancestral mound a tempting hypothesis (see also Orton et al. 2018).

The EC of Çatalhöyük West shares a number of traits that can be viewed as elements rooted in EN Çatalhöyük East and even Aceramic Neolithic Aşıklı Höyük (Özbaşaran 2012) and Can Hasan III (French 1972), such as the resumed use of the potter's clay favored in the EN (Franz and Pyzel in press) or the agglomerating settlement structure thought to be a long-term constant of central Anatolia continuing even into the Late Chalcolithic (Schoop 2005b; Düring 2006). In this perspective, the formation of the EC at Çatalhöyük West could be viewed as a site-internal return to older traditions after the disquiet of the LN, with an EC that adapted the LN package of economic strategies to the needs and traditions of the steppe area of central Anatolia and maybe in addition as a reaction to drying conditions and a possible change of the Çarşamba River in the wake of the 8.2 event.

Merging old traditions with those elements that were kept from the LN possibly created tensions between the elements signalling community control, such as the settlement structure, and elements pointing to household independence, such as the individuality in the ways of house construction. Meal sharing as suggested by the animal remains and pottery assemblage would make for a plausible means of attenuation of such conflicts. Looking at the similarities the EC shares with other regions, however, external influences also seem at play, tying Çatalhöyük West into suprasite and supraregional developments, such as the trend towards decreasing lithic on-site production and the increased importance of storage and pottery. Theories about the origin of the EC of the Konya Basin plain have to integrate both the internal and external perspective before scenarios can be developed in more detail.

It might well be that Çatalhöyük as the ancestral, and largest, site in the Konya Basin was the focus where the novelties introduced beginning in level V/P were first integrated to form an initial EC in ca. 6100/6000 cal BC in the earliest layers of the newly founded West Mound, while the East Mound and other sites like Can Hasan I remained in the LN tradition until ca. 6000/5900 cal BC. Further on, however, the developed EC is only attested during a very narrow time slot, ca. 6000–5800 cal BC. Unlike in Cappadocia, where occupation from the EC to the Middle Chalcolithic (MC) is known (Harmankaya, Tanındı, and Özbaşaran 1998; Gérard 2002), the EC in the Konya Basin soon shows signs of decline and afterwards, no (Baird 2002) or at best only a few (Harmankaya, Tanındı, and Özbaşaran 1998; Gérard 2002) MC sites are found. Maybe the changing environments and socioeconomy during the EC did not allow for a sustainable life in the Konya Basin.

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Exploring the Culture Landscape of Neolithic Hacılar (6500–6100 BCE), Southwestern Turkey

RALF VANDAM

Abstract: It has been argued that the Late Neolithic (6500–6100 BCE) settlement pattern in southwestern Turkey is dominated by small farming settlements (mound sites/höyük) located in the most optimal zones of the landscape, that is, it exhibited a nucleated settlement pattern. On the basis of new intensive field-walking data from the Burdur Plain, which is known for the Neolithic sites of Hacılar and Kuruçay Höyük, it was possible to test this supposition and examine to what extent this pattern is biased by research methods rather than reflecting ancient realia. However, the survey failed to reveal any new Neolithic sites, thus largely corroborating the nucleated settlement pattern. These results are in contrast with the succeeding Early Chalcolithic (6100–5600 BCE) period where a number of new sites have been detected that indicate a more dispersed settlement pattern. I argue that the socioeconomic organization of the Neolithic community itself may explain this absence of a dispersed and differentiated settlement pattern during the LN in southwestern Turkey. Considering the developments taking place around the second half of the seventh millennium BCE, I argue that this period in southwestern Turkey is a transitional one, during which the Neolithic way of life became established in the region.

Keywords: Hacılar, Kuruçay Höyük, Neolithic household, settlement patterns, Burdur Plain

The Late Neolithic (LN)¹ (6500–6100 BCE) in southwestern (and western Anatolia² in general) is characterized by small mound sites, which occurred in rather comparable environments, namely, fertile plain areas in close proximity to a water source. There is currently little to no evidence to support the existence of smaller temporarily dispersed farms or hamlets in the Late Neolithic landscape.

1. In this article, Mellaart's terminology and the central Anatolian chronology—that is, Late Neolithic, for the 6500–6100 BC period in the Burdur Plain—is used, as it facilitates the comparison with other regions in this volume. It should be noted that R. Duru and G. Umurtak use another periodical subdivision and terminology based on the findings at their excavations at Hacılar, Kuruçay, Höyücek, and Bademağacı.

2. See Düring 2011: ch. 5 for a general overview and discussion of known Neolithic sites in western Anatolia.

A rather similar observation, although on a much larger level and scale, can be made for the Konya Plain in central Anatolia, where surveys have revealed that Çatalhöyük was the only settlement during a substantial part of the seventh millennium BC (Baird 2005). However in the second half of the seventh millennium BC, when we see significant changes in the settlement organization of Çatalhöyük (During 2006; Marciniak and Czerniak 2007; Özdöl-Kutlu et al. 2015), smaller sites appear in the vicinity of the site (Baird 2005). This all suggests that we are dealing with a settlement nucleation rather than a dispersed settlement pattern in both areas during the first centuries after the Neolithic way of life was introduced. The question can be raised, however, as to what extent this seeming pattern of nucleation at mound sites in the Late Neolithic in western Turkey reflects an actual pattern in the past. It may very well be the result of a lack of intensive archaeological research or site visibility problems through, for instance, concealing processes. On the basis of a case study of the Burdur Plain (southwestern Turkey, figs. 1 and 2), where the Sagalassos Archaeological Research Project conducted a series of intensive surveys in the vicinity of ancient Hacılar (Mellaart 1970) from 2010 to 2012, we are able to shed light on this question.

The long history of archaeological research on Late Prehistory in the Burdur Plain (fig. 1 and 2), including extensive surveys (e.g., Mellaart 1954; Özsait 1976–1977; Waelkens et al. 1997), and excavations at Hacılar (Mellaart 1970) and Kuruçay Höyük (Duru 1994) have served as an ideal basis for a more intensive survey. These archaeological activities not only substantially contributed to our understanding of the Late Prehistoric communities in general, but they also allowed us to investigate a small area in detail without losing sight of the larger regional pattern. The surveys previously conducted in the area were site-focused and nonsystematic, and therefore identified mainly the larger or most visible settlements while overlooking smaller, less obtrusive sites (Cherry 1983), which may result in a considerable bias for reconstructing past settlement patterns. By conducting an intensive survey in the Burdur Plain we hoped to obtain a better and more detailed idea of the diverse nature of human activity during the Late Prehistory. The combination of the new Burdur Plain survey results and the previously conducted research allows us to reconstruct the Late Neolithic cultural landscape in this area in detail and to assess the validity of this typical nucleated mound settlement pattern. Were Hacılar and Kuruçay Höyük really isolated mound sites during the Late Neolithic? What type of settlement occurred in their surroundings and what was their relationship to them? The Late Neolithic results of our intensive survey are presented here, followed by a comprehensive reconstruction of the Late Neolithic cultural landscape in the Burdur Plain. To fully grasp the character of the second half of the seventh millennium BC, our outcomes will be contrasted with survey results for the preceding and succeeding periods.

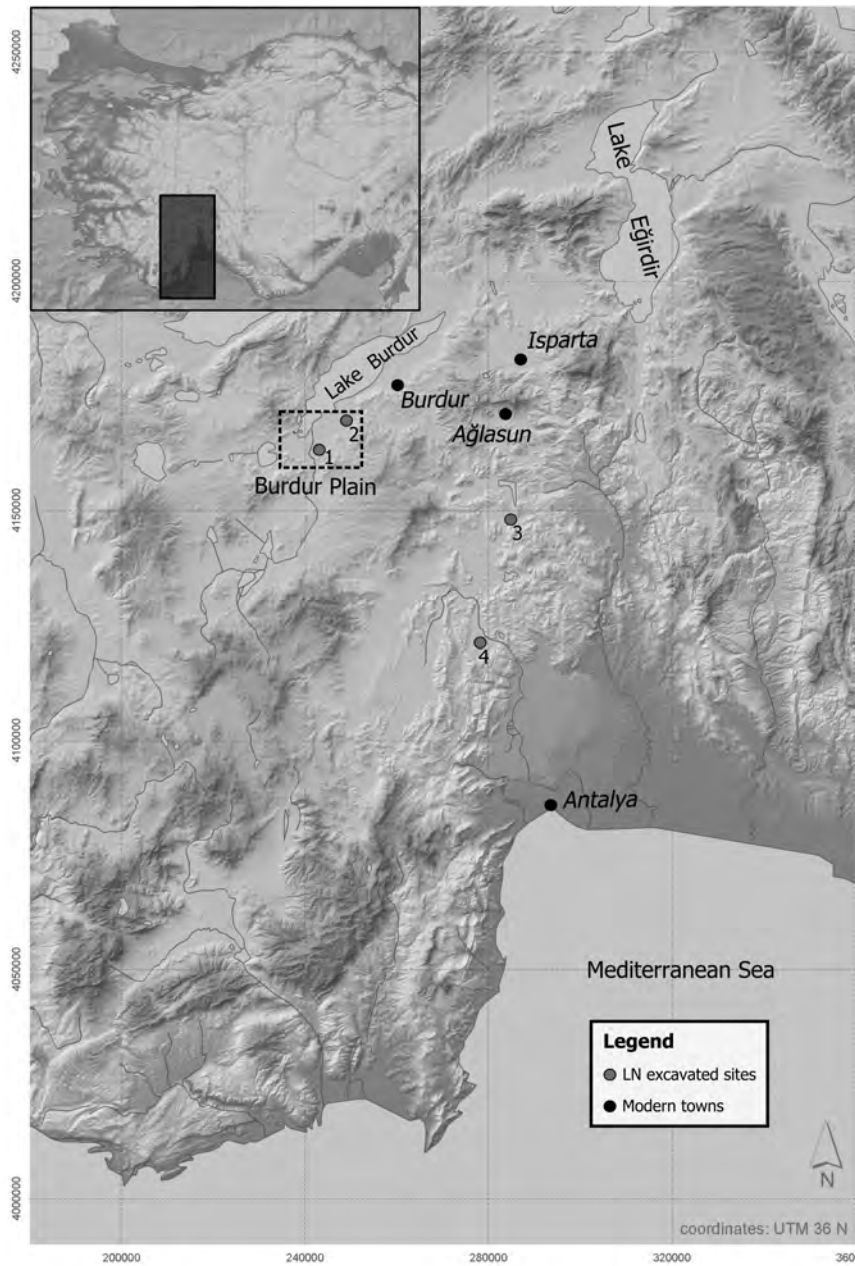


Fig 1. Overview of the Burdur Plain in southwestern Turkey. The red dots represent the excavated Late Neolithic sites: Hacılar (1), Kuruçay Höyük (2), Höyücek (3), and Bademağacı (4).

The Burdur Plain Survey

The Burdur Plain covers an area of about 120 km², and is part of the large Burdur Basin, which also includes the Burdur Lake and is situated within the western Taurus Mountains (figs. 1 and 2). Since the total area is too large to survey the whole area intensively in three seasons, it was decided to focus on one specific area within the Burdur Plain: the southwest corner (fig. 2). This area was chosen as it is part of the interaction area of the excavated Late Prehistoric sites Hacilar and Kuruçay Höyük, and because it is characterized by very fertile, arable land and fresh water sources (the Boz Çayı, the Düğer Çayı, and several springs; see fig. 2), which make this area suitable for human occupation. Furthermore, the southwestern corner comprises a representative sample of the different landscape units (rivers, springs, flat land, the edge of the plains, hills, etc.) that make up the whole Burdur Plain. The focus of the survey was mainly on the plains and the border of the plains with the hills, but segments of the surrounding hills as well as flood plains were included in the survey. Unfortunately, the terrain and the poor visibility of the hills due to vegetation complicated a systematic survey in this area. Also, the hills in the Burdur area seem to have been affected by severe erosion (Dusar et al. 2012), which probably resulted in the displacement of archaeological material.

Survey Methodology

The applied survey methodology³ for the Burdur Plain was directly based on a successful intensive field walking (or tract walking) survey carried out in the Jordan Valley (Kaptijn 2009) and generally corresponds with the methodology used in other intensive survey work carried out in the eastern Mediterranean (e.g., Davis et al. 1997). For the Burdur Plain intensive survey, the field walkers surveyed 1 m wide lines spaced 20 m apart from each other (fig. 3). Spacing field walkers between 15–25 m is commonly used by other survey projects as it makes it possible to cover a large area each day (Mattingly 2000: 8). This method of surveying detects all artifact concentrations which are larger than 20 m in extent. All artifacts that were encountered were bagged separately for each 50 m segment of the survey line, referred to as “plots,” which makes it possible to detect changes in density along these survey lines (fig. 3). Additionally, the field walkers registered abrupt changes in density within the 50 m plots, which, in a nonprecise way, further increased resolution. During the survey of each plot the visibility was graded on a scale of 1–5, and generally proved to be good to excellent. Nowadays, almost the entire plain is used for cereal cultivation and to a lesser extent for garden cultivation, especially near the villages. When fieldwork was conducted, mainly in the second half of July, all of the fields had been harvested and ploughed, pro-

3. For a more detailed discussion of the applied methodology see Kaptijn (2009: ch. 3).

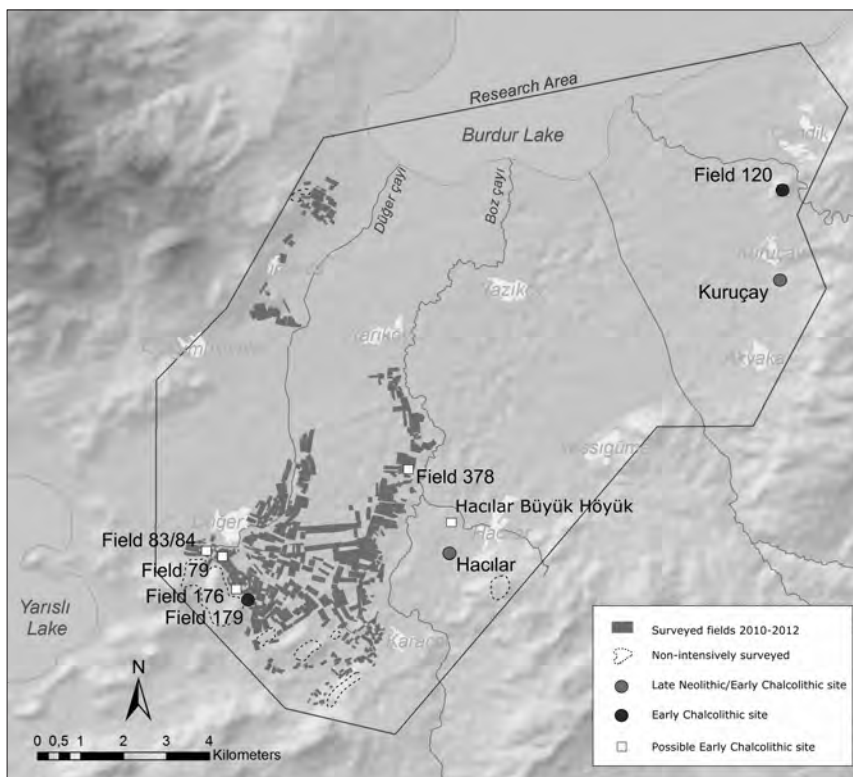


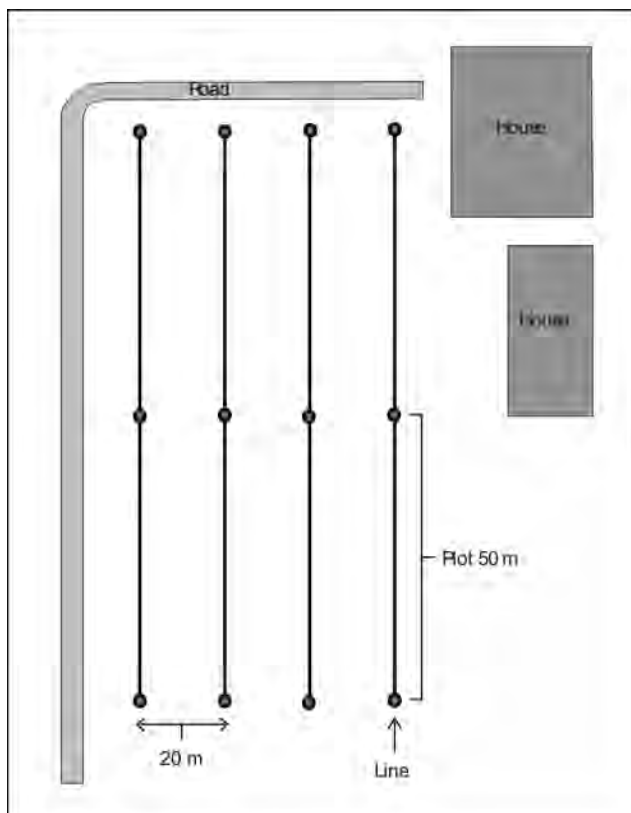
Fig. 2. A detailed overview of the Burdur Plain and surveyed area. All place names refer to modern villages. The red dots represent the excavated multiperiod sites: Hacılar (1) and Kuruçay Höyük (2). The possible Early Chalcolithic sites comprise all sites where we found a very limited amount of Early Chalcolithic sherds, alongside younger material. Field 120 is also known as Çığırkankaya; it was discovered by Özsait (1976–1977).

viding almost perfect visibility in the survey area. Finally, we chose to approach the Burdur Plain landscape from a nonsite perspective (Bintliff 2000), which allowed us to document the continuous distribution of artifacts over the landscape. This implies that the survey method was carried out without modifications in all areas and for all density levels. There proved to be a clear distinction between off-site densities (an average of 0.4 sherds per 100 m²) and on-site densities (up to 23 sherds per 100 m²) in the Burdur Plain landscape, which greatly helped in identifying sites.

Survey Results

A total of five to six people walked the fields during the last three weeks of July 2010–2012. During that time a total area of 8.1 km² was surveyed (fig. 2), which is about one thirteenth of the total Burdur Plain. About 10,535 sherds were col-

Fig. 3. Intensive survey methodology applied in the Burdur Plain



lected, among which the Late Chalcolithic and Early Bronze I–II, together with the Archaic/Classical/early Hellenistic and Ottoman periods, were best represented (Kaptijn et al. 2012; Vandam et al. 2013). The late prehistoric period in general yielded a large proportion of the survey material, representing about half of the dated pottery. However, despite intensive research, the survey in the Burdur Plain yielded no clear Neolithic finds to complement the finds from the previously known settlements of Hacılar and Kuruçay Höyük (fig. 2). These survey results contrast sharply with our results for the succeeding Early Chalcolithic period (6100–5600 BC). It is clear now that during the Early Chalcolithic period neither Hacılar nor Kuruçay Höyük were isolated nuclei of habitation in the landscape, since other contemporaneous sites were identified in their immediate surroundings (<5 km) (fig. 2). On top of that, a few Early Chalcolithic finds were found at several Late Chalcolithic/EBA sites, which may suggest that these locations also had Early Chalcolithic predecessors. Also, a limited amount of Early Chalcolithic sherds have been found during the ongoing excavations of the EBA site of Hacılar Büyük Höyük (Umurtak and Duru 2013: 18). Our Early Chalcolithic survey results indicate a notably denser occupation of the Burdur Plain

than hitherto assumed while smaller-sized hamlet sites (i.e., Field 179), and hill-top sites (i.e., Field 120), also seem to have occurred. For the following periods, the Middle Chalcolithic (5600–4200 BC) and the beginning of the Late Chalcolithic (4200–3500 BC), no indications of human activity have been attested so far (Vandam 2015 and Vandam, Willett, and Poblome 2019), which leaves a lacuna of almost 2,000 years in human occupation within the Burdur Plain. For the last phase of the Late Chalcolithic (3500–3100 BC), however, a strong rise in settlement numbers is evident. The Burdur Plain Survey revealed that in addition to Kuruçay Höyük at least eight other settlements occurred in the last phase of the Late Chalcolithic (Vandam, Mušič, and Medaric 2019), of which the majority appear to be small-sized and probably short-lived. The strong continuity between the Late Chalcolithic and Early Bronze Age is noteworthy but no evidence of settlement hierarchy was observed.

Recognition and Visibility Problems

The lack of Late Neolithic finds in our Burdur Plain survey is an interesting outcome as it may indicate a nucleated settlement pattern similar to the one observed in other areas of Anatolia. However, the question remains whether or not our Late Neolithic settlement pattern is biased by recognition and visibility problems in our survey results.

First, the apparent absence of Late Neolithic material can be caused by a recognition problem concerning the Late Neolithic material. However, it seems rather unlikely that a recognition problem played an important role, given that the character of the Late Neolithic material culture in the Burdur-Antalya area is well known thanks to excavations at Hacilar, Kuruçay Höyük, Bademağacı Höyük, and Höyücek (fig. 1). Based on the outcome of recent chronological research, including absolute dates (Schoop 2005; Thissen 2010) it can be concluded that in the Burdur Plain, Hacilar Level IX–VI, and Kuruçay Höyük Level 13 can be dated to the Late Neolithic (6500–6100 BC). The ESP and Sh.P phase of Höyücek and the EN II: 4–1 Levels of Bademağacı in the larger area can be assigned to this period too. The Late Neolithic pottery (fig. 4) in the Burdur Plain is in general characterized by a burnished monochrome surface, in mostly slipped darker red-brown, gray, or buff colors in the late phases and mostly unslipped beige to light gray colors in the earlier phases. The forms are simple, comprising S-shaped bowls, bowls with everted rims, jars with short necks, and globular or oval hole-mouth jars. Also typical for Late Neolithic pottery is the tubular lug handle as many pots have three to four of these lugs (fig. 4). Given these distinctive general characteristics of Late Neolithic pottery, we observed no material of that type or date during our intensive surveys in the Burdur Plain. The only recognition issue that could have influenced our Late Neolithic survey results is the



Fig. 4. Left: Red-brown slipped and burnished oval jar (h: 36 cm) with 4 jug handles, recovered from Hacilar (Level VI; Mellaart, 1970: 263). Right: simple burnished bowl (h: 9.4 cm, w: 11.2 cm) from Höyücek (Shrine Phase). Both objects are preserved at the Burdur Museum. (Photographs by Bruno Vandermeulen and Danny Veys.)

fact that there seems to have been a strong continuity between the Late Neolithic and the beginning of the Early Chalcolithic, meaning that Neolithic vessel types, features, and decoration continued into the Early Chalcolithic. The painted pottery, for instance, which is seen as the hallmark of the Early Chalcolithic for this region, already occurred in limited numbers during the Late Neolithic (Hacilar Level VI; 10% to up to 70% in Level I, Mellaart 1970: 105 and 130). The collected Early Chalcolithic survey material, however, shared most clearly characteristics with the last phases of the Early Chalcolithic (i.e., clear linear style of painted pottery, basket pottery), when most of the Late Neolithic features had already disappeared.

Second, the lack of Neolithic finds in our survey could be caused by erosion and sedimentation processes, which occurred (and still occur) in the Burdur Plain. It is known that such processes have implications for the exposure, burial, or destruction of sites (Waters 1992). In another paper on our Middle Chalcolithic materials (Vandam in press) I argue that visibility problems may have influenced our survey results, including the Late Neolithic results, in some parts of the survey area. Recent studies (Kis et al. 1989; Erol 1997) have pointed out that the Burdur Plain landscape was mainly formed during the Late Pleistocene, around 25,000 and 20,000 BP, when the Burdur Lake started to retreat towards its modern size, suggesting that the Burdur Plain has generally good visibility for the periods under consideration. Trenches of 2 to 3 m deep, dug for irrigation purposes close to the eastern edge of the Boz Çayı (fig. 2) and studied by geomorphologists in 2012, showed a series of lake deposits (presumably from the Pleistocene and character-

ized by well-sorted and relatively fine-grained deposits) intertwined with near-shore lacustrine and fluvial deposits (medium coarse-grained to coarse-grained); no buried sites were attested in the trenches. These deposits demonstrate the complex history of the lake, with several identified phases of regression and transgression. Moreover, the discovery of a lithic artifact concentration without any pottery, possibly dating to the pre-Late Neolithic (see below) and our findings from many other Late Prehistoric sites, in the plain area illustrate the good visibility of the plain itself. Three zones of the Burdur Plain landscape, however, may have been more prone to erosion and sedimentation processes: the floodplains of the rivers, the edge of the plain along the foothills and, as mentioned above, the hills themselves. Unfortunately, some of these locations also seem to have been favorable for human occupation during late prehistory, as illustrated by the discovery during our survey of Field 179, an Early Chalcolithic site along the foothills (fig. 2), although no Late Neolithic sherds were found at this site. The existence of the site at Field 179 only caught our attention because digging activities had recently taken place, probably to level the area for agricultural purposes.

A last issue with respect to visibility that needs to be considered is the fact that some of the many multiperiod sites in the Burdur Plain may have covered smaller-sized Late Neolithic predecessors. Only by excavating and sampling a representative portion of known Late Chalcolithic–Early Bronze Age sites can this hypothesis be tested. However, at many of these sites, a small amount of Early Chalcolithic sherds have been found (but no Late Neolithic sherds).

The Late Neolithic Cultural Landscape in the Burdur Plain

Given the discussion above on recognition and visibility issues in the Burdur Plain, the conclusion can be drawn that the lack of Late Neolithic survey results is potentially biased by the latter. Although in general the Burdur Plain offers good visibility, distorting postdepositional processes may have been active in the hills, along the foothills, and in the floodplains of the rivers, resulting in erosion or the deposition of river-borne sediments. In spite of these visibility problems, however, it can also be argued that the settlement pattern of the Late Neolithic has different characteristics than that of the succeeding Early Chalcolithic in the Burdur Plain. In the plain itself, which seems to have been least troubled by concealing processes, we encountered Early Chalcolithic artifacts, but no Late Neolithic finds. This observation indicates that despite the great continuity and stability between these periods, it is most likely that there was a shift in settlement pattern during the Early Chalcolithic in which new areas were exploited. The lack of survey results for the Late Neolithic may thus suggest that the Burdur Plain was less densely occupied during the second half of the seventh millennium BC than during the succeeding Early Chalcolithic period when we also have evi-

dence of different types of settlement. As mentioned, only Hacılar Level IX–VI and Kuruçay Höyük Level 13 in the Burdur Plain can be dated to the Late Neolithic (6500–6100 BC) during which the latter was only occupied during the last phase of this period (Schoop 2005; Thissen 2010). The unearthened materials from these Late Neolithic levels suggest that we are dealing with Neolithic agricultural settlements. The excavations at Hacılar (mainly Level VI, Mellaart 1970: 9–22), for instance, revealed a wide range of finds and structures including agricultural storage facilities, domestic buildings (fig. 5) with hearths and ovens, an array of consumption and storage pottery, idols, and agricultural, food processing, and textile tools, which indicates that it was a habitation site. Despite the lack of architectural remains at Level 13 of Kuruçay Höyük, the attested range of pottery and other finds at the site (Duru 1994: 20–21 and pls., 34–36, and 217) suggest a similar interpretation of Hacılar as agricultural settlement.

The exact size of the Late Neolithic settlements in the Burdur Plain is hard to determine through the absence of architectural remains of Kuruçay Höyük Level 13 and by the fact that only a limited area of the Late Neolithic levels at Hacılar has been unearthened (fig. 5). Mellaart (1970: 22) estimated that Hacılar Level VI comprised about fifty houses which were inhabited by 250 people. Although his excavations only unearthened a few buildings in Level VI (fig. 5), Mellaart based his calculations on the development of the settlement plan and on the fact that each house must have been occupied by five individuals. This estimation is, however, most uncertain as the number of houses is unknown as well as the total individuals in one household. Moreover, Mellaart's calculation is based on the idea that all buildings were occupied at the same time. If we consider the total diameter of the multi-period mounds of Hacılar (137 m; Mellaart, 1970: xii) and Kuruçay Höyük (90 m; Duru 1994: 1), it can be stated that at their absolute maximum the sites would still fall within the threshold of a village. Probably the actual size of the habitation area during the Late Neolithic phase was considerably less. Therefore, these two settlements can most likely be categorized as small to medium-sized villages consisting of several dwellings. The Late Neolithic Burdur Plain sites can from this point of view best be labeled as so-called “face-to-face communities” (Kosse 1990; Bintliff 1999; Düring 2006), which functioned on the basis of personal contact and a social control mechanism in which everybody knew each other (Düring 2006: 307).

With regard to the environmental context of the Late Neolithic settlements in the Burdur Plain, various similarities can be noticed. Both Hacılar and Kuruçay Höyük are located on the valley floor, close to the edge of the plain near the surrounding hills, although the latter is situated more towards the hills on a higher altitude than the former ($\pm$ 960 m, 20 m higher). A clear preference for locations in the vicinity of fresh water sources, such as springs and streams, as well as of fertile land, is noticeable, and has been illustrated by a multivariate

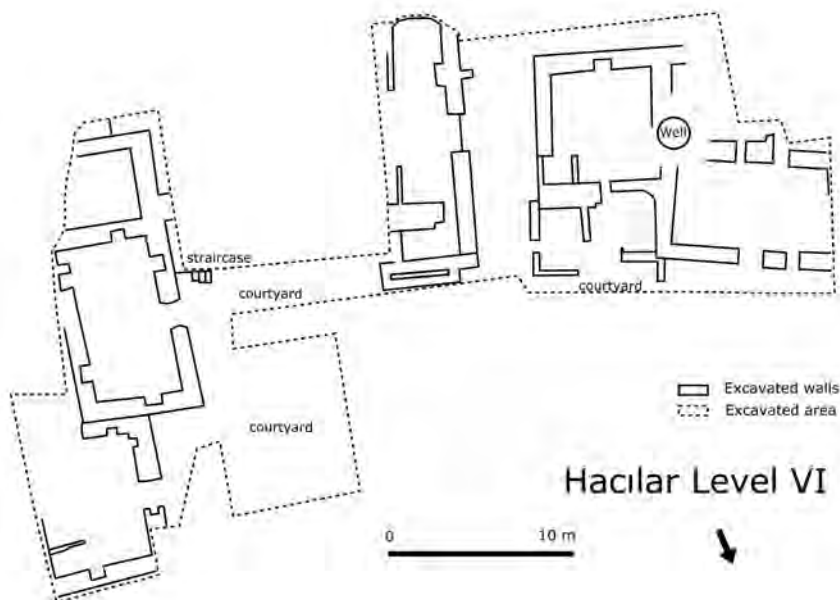


Fig. 5. Simplified settlement layout of Hacilar Level VI. (From Cutting 2003, fig. 4 and Mellaart 1970: 13.)

analysis (Vandam, Kaptijn, and Vanschoenwinkel 2013) which leads to the conclusion that these locations were specifically chosen for agricultural purposes. The settlement preference for well-watered areas, however, was probably not only important for cereal-growing but for many other reasons and resources, like reed harvesting for instance (Sherratt 1980: 315). The discovered faunal and macrobotanical remains at the Late Neolithic levels of Hacilar (Helbaek 1970; Westley 1970) illustrate that mixed farming was practiced, with a wide range of plants, crops, and animals (De Cupere et al. 2017; Vandam and Kaptijn 2015). For Level 13 of Kuruçay Höyük, no cultivated plant remains or animal remains of domesticates were retrieved, and, as argued in Vandam and Kaptijn (2015), these results should be treated with caution. The other excavated Neolithic sites of Höyücek (De Cupere and Duru 2003; Martinoli and Nesbitt 2003) and Bademağacı (De Cupere, Duru, and Umurtak 2008) in the greater area (fig. 6) revealed outcomes similar to Hacilar with respect to their subsistence. The attested crops of Late Neolithic sites comprised pulses (e.g., lentils, chickpeas), and cereal grains (e.g., free threshing wheat, barley, and hulled wheat), which point to the use of different cultivation plots (De Cupere et al. 2017). The faunal data of the Neolithic Burdur sites suggest the typical four food animals, pigs, goats, sheep, and cattle (although the last mentioned was missing at Late Neolithic Hacilar), were exploited from the beginning. A more detailed study on the faunal remains of Bademağacı,

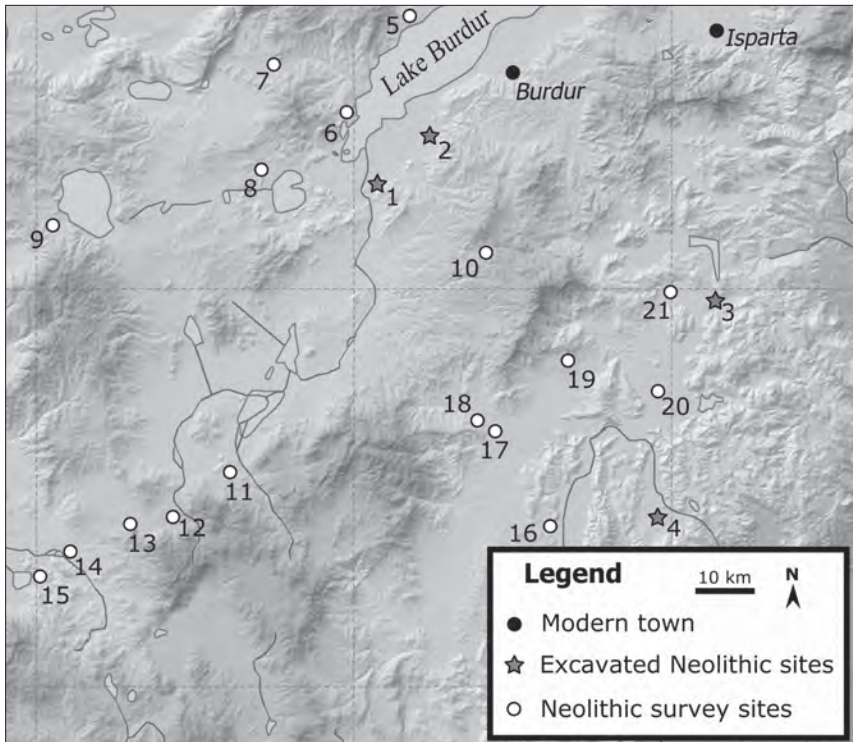


Fig. 6. An overview of known Late Neolithic sites in the greater Burdur area, based on the recent overview of French (2012: fig 11.16) in the publication of the Balboursa Survey, with extra data from the Sagalassos surveys and the ones from M. Ozsait. (1) Hacılar, (2) Kuruçay Höyük, (3) Höyücek, (4) Bademağacı, (5) Ilyas, (6) Karakent, (7) Kanlıtepe, (8) Sazak, (9) Salda, (10) Gölde, (11) Yarıntepe, (12) Seyitler, (13) Karamusa, (14) Çavdır, (15) Göl Ada, (16) Taş Höyük (17) Fuğla (Kızlar), (18) Eskiköy, (19) Keçili, (20) Karaaliler, (21) Incer.

including slaughter data, showed that the inhabitants relied heavily on goats and sheep, which were exploited not only for their meat but also for their secondary products, such as milk products (De Cupere et al. 2017).

Similar crop and animal remains, and characteristics of subsistence practices, like the use of dairy products, have been found at other Neolithic sites in western Anatolia (Çakırlar 2012; Buitenhuis 2008; Riehl 2014). This, however, does not imply that there was no diversity within the mixed-farming subsistence practices between different regions, which also has been argued in the mixed-farming model of Neolithic Europe and the Near East (Bogaard 2005). Different emphasis was placed on particular components of this mixed-farming system at certain sites and regions, for example, dairy products in the Marmara Region (Evershed et al. 2008), or certain animals and crops might be missing at one site

yet present at other sites (e.g., cattle). Hunting, although present at some sites, never seems to have played a major role in subsistence during the Neolithic in western Anatolia.

By comparing subsistence of the Neolithic Burdur societies with more thoroughly understood subsistence bases (based on ethnographic work, isotope studies, and weed flora studies) of early farmers in the Neolithic Aegean and Europe (Halstead 1981, 1987; Bogaard 2005, 2004b; Jones 2005; Vaiglova et al. 2014), it becomes clear that there are striking similarities. The range of faunal and crop remains in the Burdur Region, as well as the lack of evidence for extensive woodland clearance in the pollen sequence (Eastwood et al. 1999; Vermoere 2004) and for ox traction (De Cupere, Duru, and Umurtak 2008) points towards an intensive garden cultivation that was rather small-scale, similar to the Neolithic of the Aegean and Europe. The sufficient amount of rainfall in the Burdur Region (annual 420.7 mm, Burdur Weather Station) makes it possible to practice this type of subsistence rather than, for instance, cultivation based on irrigation. Results from recent subsistence studies (including stable isotopes analyses, dung analysis, and weed flora studies) at Neolithic Çatalhöyük, in central Anatolia, indicate a similar type of intensive subsistence practice (Bogaard et al. 2014; Filipovic 2014), which conflicts with previous ideas about subsistence at the site (Roberts and Rosen 2009).

Intensive garden cultivation is characterized by a high labor input per unit area and thus a restricted scale of cultivation area. Crop cultivation in this system is intensive in terms of tillage, weeding, manuring, and watering (Bogaard 2005, 2004b) and is practiced on permanent plots rather than by shifting cultivation. The production of a good fertile field must have required several years of intensive labor, which made these garden soils highly valuable, thus providing an incentive to cultivate the same plot of land (Bogaard 2004a; Jones 2005). Crop cultivation and animal husbandry in a horticulture subsistence economy were likely closely integrated, as animals could manure the fields and be fed by the crops (Bogaard 2004a, 2004b). Since this type of farming is so intensive, it would also imply the close proximity of habitation places and cultivation plots, thus facilitating the manuring and repeated weeding associated with this type of agriculture (Jones 2005).

Numerous extensive surveys in the greater Burdur area (see fig. 6) have revealed other Late Neolithic sites that share great similarities with the sites from the Burdur Plain and illustrate that Hacilar and Kuruçay Höyük were not that unique in the larger area. As mentioned, two of those sites have been excavated: Höyücek and Bademağacı (fig 1). Both sites shared many similarities with Hacilar and Kuruçay Höyük in their finds and structures (Duru 2012), and can therefore also be labeled village-type settlements, although during the Shrine Phase some

rooms of Höyücek may have had a more ritualized function, as Duru and Umurtak (2005: 164–72) argue.

The Late Neolithic sites in the greater Burdur area (fig. 6) are not concentrated in one or two basins, but are more spread out throughout the different intermountain plain areas. Thus, despite the relative high number of known Late Neolithic sites, the plain areas seem, just like the Burdur Plain, to have been sparsely occupied, especially in comparison with the succeeding Early Chalcolithic period. No Late Neolithic sites and even Chalcolithic sites, however, have been found in a more mountainous area around the villages of Ağlasun and Dereköy in the northeastern part of the Burdur Region, south of Isparta (fig. 6; Vanhaverbeke and Waelkens 2003: 104). This observation is further supported by recent survey endeavors in the highlands of Dereköy (Vandam, Willett, and Poblome 2017). Pollen data from the eastern extent of the Ağlasun Çayı indicates that the valley floor during the Early Holocene was particularly wet and revealed no human impact during this period (Vermoere 2004). Perhaps the valley was too wet for early agriculture. However, it must be stressed that this does not imply that the highland landscapes were entirely avoided during the Early Holocene. In the survey lithic artifact scatters were found with Neolithic traits (Vandam, Willett, and Poblome 2019). As in the Burdur Plain, all known Late Neolithic sites in the greater Burdur area (fig. 6) are mainly located in the lowlands, mostly several hundred meters from the border between the plain and the surrounding hills and close to fresh water sources. Their location near the edge of the plain might have something to do with the threat of floods (Becks 2013: 16); the fact that these locations provide a better view over the plain and are thus more strategic; or the different type of natural resources that were present there, like shrubs and trees (Vanhaverbeke and Waelkens 2005).

Much like the Burdur Plain, the Late Neolithic occupation in the greater Burdur area is limited to mound sites, or sites that over time would turn into mounds, which were in most cases also occupied in the Early Chalcolithic. In addition, none of the identified Neolithic sites extended beyond 3 ha, which indicate that they all fall within the threshold of village communities, similar to what has been observed in the Aegean Neolithic (Perlès, 2001: 131). The high number of Neolithic settlements and their close proximity to one another (10–20 km) is notable. Although it is not very likely that the settlements were all occupied at the same time, the proximity of other Late Neolithic sites may have been an advantageous settlement strategy as it could enhance the exchange of goods and knowledge, and social gatherings (Düring 2006) or reduce economic risk (Halstead 1999).

A final characteristic of the Late Neolithic landscape in the Burdur Plain and the greater region that needs to be discussed is the lack of a dispersed and differentiated settlement pattern with, for instance, hamlets in a short distance from

villages, as we were able to demonstrate for the succeeding Early Chalcolithic and Late Chalcolithic periods. Several factors may have resulted in the type of sparse, nucleated, mound-based settlement pattern of the Neolithic in the Burdur Plain, ranging from political and economic factors to ones that are archaeologically less easily detectable, such as ideology (Roberts 1996: 35–37; Wilkinson, Ur, and Casana 2004). One might conclude that the low population within these Neolithic Burdur communities resulted in the lack of a more “complex” settlement pattern, but, as mentioned, the number of settlements within this area is quite high, which most likely implies a rather high Late Neolithic total population in this area. It also known that the high population of communities in itself does not lead to a more dispersed and differentiated settlement pattern as can be seen at Neolithic Çatalhöyük in the Konya Plain (Baird 2005). In this particular case-study of the Late Neolithic settlement pattern of the Burdur Plain, I would like to consider the role of the socioeconomic organization of the community itself as one of the possible reasons why we lack a dispersed and differentiated settlement pattern, as has been argued by other scholars for the Neolithic in adjacent regions (Düring 2007; Marciniak and Czerniak 2007; Tomkins 2010).

The idea of a Neolithic society in which separate households were maintained in large communities was established a while ago (Flannery 1972) and has been well illustrated and well studied in the different periods of the Neolithic in the Near East and Aegean (e.g., Halstead 1999; Byrd 2000; Tomkins 2004; Düring and Marciniak 2006). Considering the settlement organization and building layout of Hacilar Level VI, it becomes clear that this phenomenon also holds true for the Late Neolithic communities in the Burdur Plain. The houses in Hacilar Level VI consisted of one main domestic living area ($\pm 30\text{--}50\text{ m}^2$; Mellaart 1970: 12–13), which implies that each house could accommodate a single household unit. The presence of several storage bins in the houses suggests that households might have functioned economically independently (Cutting 2005: 99, 129; Mellaart 1970: 15), a supposition that is also supported by the fact that no communal storage facilities have been encountered.

On the other hand, it seems highly unlikely that the storage capacities in these houses provided enough supplies for a whole year. Indeed, there are several indications—especially in the construction and spatial arrangement of the buildings (Cutting 2005: 99, 129–30)—of the importance of the community in the society and of a substantial amount of interhousehold cooperation at Hacilar Level VI. First, the houses were clustered together and mostly shared party walls (Mellaart 1970: 12–13). Second, the dwellings were organized around large, open, communal areas, interpreted by Mellaart (1970: 11) as courtyards, indicating a coherent form of settlement organization. The entrances to the houses, moreover, were all oriented towards the courtyard (Cutting 2005: 99), just like the exterior kitchen areas, which were built against the main rooms (Mellaart 1970: 15). The

presence of these external cooking places was interpreted by Mellaart as a fire safety measure, but might also be seen as an indication of food sharing between households (Halstead 1995: 16).

A Neolithic period with a strong community focus and clustering would make it less appealing for a Neolithic household to exploit other areas of the landscape and to capitalize on its short-term success. It might well be that the entanglement within the community prevented this. As Halstead (1989: 71–75) argued for early farming communities in the Aegean, the community may have functioned in a system of necessary reciprocal obligations and sharing, which simultaneously balanced risks, provided stability, and maintained equality between the households. It would mean that the community was prominent and brought the households together for ritual, economic, social, and technical activities, such as harvesting or house building. As Tomkins (2010: 37) pointed out for Katasambas near Knossos and Marciniak and Czerniak (2007: 127) for the Late Neolithic in central Anatolia, the appearance of smaller sites can only occur if the households become more independent and autonomous. This would mean that the communal aspect, the binding framework during the Neolithic, must have lost some of its meaning in favor of a growing emphasis on household groups acting as more discrete units.

Once the household became a more independent socioeconomic unit, it could make attempts to control and increase the quality, quantity, and diversity of its own output, by, for instance, taking new and strategic locations in the landscape, possibly driven by growing social competition between households. Furthermore, the household as a more independent unit could have brought a greater organizational flexibility, making it possible to move away. It is only in succeeding periods (e.g., Early and especially Late Chalcolithic), when we have indications in the Burdur Plain of more autonomous households, that we also find a more diverse and dispersed settlement pattern (Vandam, Willett, and Polblome 2019). Lastly, communality itself can also contribute to a settlement nucleation in more social-ideological terms whereby ancestry (Wilkinson, Ur, and Casana 2004: 202) or kinship-ties (Roberts 1996: 35), for instance, may have been an enticement to live in an aggregated community rather than dispersing out into the landscape.

A Period of Transition

The main objective of this volume is to characterize the second part of the seventh millennium BC in Anatolia and beyond, and to focus on changes that took place in this period. In order to achieve this goal, it is important to contrast the Late Neolithic cultural landscape with those from the succeeding and preceding periods. As mentioned above, there was a clear continuity of the Late Neolithic

traditions into the Early Chalcolithic, although these traditions also developed further into the sixth millennium BC. In this respect the Early Chalcolithic period can be seen as a period of both stability and change, which is especially noticeable in the material culture (e.g., painted pottery) and settlement pattern. Many of the Late Neolithic sites in the Burdur Region continued into the sixth millennium BC, while at the same time new sites were also founded, among which were short-lived hamlet sites. Evidence of human occupation in the first half of the seventh millennium BC in our research area, however, is scant, which makes a comparison quite hard. Only the excavations at the sites of Hacilar and Bademağacı revealed more conclusive indications of a potential pre-6500 BC occupation.

During the last excavation campaign of Mellaart at Hacilar, seven occupation phases were found in a test pit in sector Q. He believed these are aceramic in date as no pottery sherds were found (Mellaart 1970: 3–7). Unfortunately, due to a restricted size of the soundings (150 m², Mellaart 1970: 3–7), not a single complete house plan and only very few small finds were retrieved (i.e., eleven lithics, a polished axe, and beads), which makes it difficult to study these levels and to confirm their early date. A single radiocarbon date from the aceramic levels has proven to be problematic due to its high standard deviation.

A notable feature of the aceramic levels is that the encountered house and courtyard floors was small pebbles coated with lime plaster and burnished and stained with red ochre (Mellaart 1970: 4), which seems to have been a typical feature of aceramic levels at other sites (see below). However, the aceramic chronology of these early levels at Hacilar has been questioned by Refik Duru, as indicated by the results yielded in twenty-eight soundings (3 × 5 m) within a range of 100 m around the mound, which he carried out in search of the settlement's necropolis (Duru 1989). Although the cemetery was not found, six sherds were discovered which were pressed into the surface of a red floor (Duru 2012: fig 5.8). Since this type of floor was not attested in later levels of Hacilar, the sherds were associated with the aceramic floors that Mellaart had referred to.

This discovery may justify a rejection of an older Neolithic phase at Hacilar. However, several arguments can be made to leave the option of a pre-6500 BC occupation at Hacilar open. First, without any stratigraphic link between the floors discovered by Mellaart and Duru, it is hazardous to assume that they belonged to precisely the same phase. Second, the presence of sherds in an aceramic Neolithic context is not by definition problematic as it becomes more and more clear that in these so-called pre-pottery Neolithic levels pottery occurred, though in a very small number, for example at Kfar HaHoresh in what appears to be a ritual context (Biton, Goren, and Goring-Morris 2014). Finally, the recently discovered and confirmed aceramic Neolithic levels in western Anatolia (e.g., Ulucak Level VI) (see Cevik this volume) show great similarities in material cultural with the ones

discovered at Hacilar, such as the red-plastered floors mentioned above. Therefore, it seems incorrect to reject the aceramic levels at Hacilar, though it might be better to label these levels as Early Neolithic, as Duru (1989: 103) proposed.

At the settlement of Bademağacı, there are some indications of an older Neolithic in the earliest levels labeled Early Neolithic Levels 9–5. As the Bademağacı materials have not yet been fully published, few remains attributed to the earliest levels make the beginnings of Bademağacı Höyük occupation little known. However, the occurrence of red-plaster floors (Duru 2012: 22–23) and small finds similar to those of aceramic Hacilar and Ulucak (Level VI), in addition to a secure radiocarbon date of Early Neolithic Level 8 (around 6870 ± 120 cal BC; Duru, 2008; Thissen 2010), support an older Neolithic occupation at this site. Nevertheless, the arguments based upon a single radiocarbon date need to be treated with caution.

In addition to Hacilar and Bademağacı, it is worth mentioning the discovery of several lithic artifacts by the Sagalassos survey in the Burdur Plain and beyond (Vandam et al. 2013; Vanhaverbeke et al. 2008; Vandam, Willett, and Poblome 2017; Vandam, Mušič, and Medarič 2019). These scatters were mostly like mixed in date, as artifacts with both Upper Paleolithic and Neolithic traits have been found at these locations (Vandam, Willett, and Poblome 2019). The fact that they were found without Neolithic pottery might be meaningful as well. This all suggests a dating towards the understood Early Holocene. However, due to a lack of precisely defined lithic artifacts in the study area it is difficult to date the lithics. More research on the lithic artifact scatters is planned for the future.

Based on this brief presentation of the available data of the first half of the seventh millennium BC, it seems correct to label the second half of this millennium as a period of change in many aspects. Our current evidence suggests that the Neolithic way of life may have appeared in the Burdur Region before 6500 BC, but only developed to a full extent in what we call the Late Neolithic (Düring 2013). A similar pattern can be reconstructed for western Anatolia, suggesting that the neolithization of this area was more or less simultaneous (Brami and Heyd 2011). However, it must be stressed that this does not mean that this process happened in a single phase. Moreover, each of the regional Neolithic cultures in western Anatolia has taken on a distinct form from the start and has followed its own trajectory afterwards (Düring 2011). The circumstances in which the process of neolithization took place in the Burdur Plain and beyond remain ambiguous, mainly due to the lack of data from the preceding periods. It is thus paramount to start focusing more specifically on this gap of knowledge and to attempt to clarify this hiatus.

In conclusion, the case study of the Burdur Plain supports the idea that the Late Neolithic in western Anatolia was characterized by a nucleated mound-based settlement pattern. Three seasons of intensive surveying in the Burdur

Plain did not bring any new sites to light, in addition to Hacilar and Kuruçay Höyük. Although concealing processes may have influenced our survey results in certain areas such as the floodplains and foothills, the great contrast with the results from the succeeding Early Chalcolithic is most notable. The lack of a dense settlement pattern as well as the lack of settlement differentiation suggests that the nature of the Late Neolithic settlement pattern is different from that of the Early Chalcolithic. Currently it seems that the Late Neolithic farming communities in the Burdur Plain organized themselves in small or medium-sized villages, which were located in favorable areas, that is, well-watered and fertile land. A similar pattern was observed in the broader Burdur Region, and evidence for smaller temporarily dispersed farms or hamlets was missing here too.

The Late Neolithic settlement pattern can be the outcome of different processes, but in this essay, the socioeconomic character of the Neolithic community was scrutinized in reference to a general model, established for the earlier Neolithic Aegean and central Anatolian communities, in which early farming communities are understood to have been primarily communal in their organization. Given the strong emphasis on communality it would have been logistically and organizationally difficult for a Late Neolithic group to exploit an empty niche in the Burdur Plain as it has not yet developed into socially and economically independent units as in the following periods. However, this does not exclude the possibility that there are many more unrecognized Neolithic sites to be found in southwestern Anatolia.

Through a comparison with the succeeding and preceding periods, it has become clear that the Late Neolithic can be considered as a period of transition. Up until now it has been unclear when, by whom, or how the Neolithic was introduced in the Burdur Region, and in western Anatolia in general, and more research needs to be carried out to clarify this hiatus. It has been argued for years that the Neolithic way of life was introduced around 6500 BC, which is about 1500 years later than first documented in southeastern Anatolia. Now, however, the presence of deposits from the first half of the seventh millennium BC at Ulucak Höyük and possibly at Hacilar, as well as early finds at Bademağacı, suggest that this process took place earlier. As illustrated here, it is only from 6500 BC onwards that the Neolithic really developed to scale with a clear continuity of Neolithic traditions into the Early Chalcolithic. The end of this LN–EC culture is marked by the abandonment of the sites in the Burdur Plain and region around the middle of the sixth millennium BC, after which a gap in human habitation of nearly two thousand years—the MC and the beginning of the LC—in this area occurred. Further research needs to be carried out to better recognize circumstances for this pivotal transition, since it seems rather unlikely that humans disappeared for such a long period in one of the areas best suited for occupation in the whole region. The question then becomes what

form the Middle Chalcolithic sites took, how societies were organized and how they related to the preceding LN-EC culture.

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Changing Ideologies in Community-Making through the Neolithic Period at Ulucak

ÖZLEM ÇEVİK

Abstract: While the materiality of Neolithic identities in the Near East and in the Europe has been addressed widely, materiality in relation to the neolithization of western Turkey has not. The matter is treated as if the process was already completed in the East and the Neolithic communities of western Turkey were simply the final or replicated form what had been evidenced in the east. With its well-preserved building sequence, covering a time period spanning more than a thousands years (6850 cal BC), Ulucak Höyük now provides us with an opportunity to discuss how Neolithic communities in western Turkey negotiated their identities as well as to trace potential transformations by way of constructing these identities through the Neolithic period. Ultimately, this article suggests that the media which played an crucial role in construction of social relations and identities in Ulucak were shifted from the communal buildings to the newly emerged intermingling set of new objects in the late seventh millennium.

Keywords: Neolithic, Ulucak, western Turkey, symbolism, personhood and communal identity

It is increasingly being realized that from the beginning of sedentary life, the Neolithic period in Southwest Asia was characterized by communities whose identities and sense of belonging were constructed in various ways, for example, through continuity in building structures, symbolism, burials, and recurring performances in certain demarcated spaces, whether domestic or communal (Watkins 1990, 2004; Kuijt 2008; Atakuman 2014; Düring 2005, 2006). These spaces have tended to be seen as the physical arenas where community membership was negotiated via a particular emphasis on collective memory. The recurring events, acts, and performances in these spaces played an important role in the formulation and maintenance of collective memory. These physical activities, together with the spaces where these activities were carried out, provided a powerful link between the past and the present, and mediated the construction of personhood



Fig. 1. Map showing the location of sites mentioned in the text.

and communal identities (Watkins 2004, 2014; Connerton 1989). As a matter of fact, it is at this interface that time and space were interlinked, forming the crucial dimensions for the materialization of social life rather than simply providing a backdrop to social processes (Düring 2014).

It has been argued that some long-lived houses at Çatalhöyük with rich ritual and symbolic content and numerous subfloor burials served as “history houses” where memory of past actions persisted, and therefore became important to social groups (Hodder and Pels 2010). Building continuity in several Neolithic sites, such as Aşıklı and Çatalhöyük, has also been interpreted as having played an important role in the social life of much of Neolithic Anatolia. The term building continuity refers to buildings reconstructed on the same spot, with the same dimensions and with the same orientations over a series of rebuilding episodes and over a considerable span of time (Düring 2014: 121). Using the concept formulated by C. L. Strauss, these long-lived houses, together with various ritual, symbolic, and burial phenomena, have been interpreted as “lineage houses,” to which the rest of the community members who inhabited other houses attached their identity, and in relation to which they primarily defined themselves (Düring 2006).

With regards to communal structures such as those found in Çayönü, Göbeklitepe, Nevalı Çori, and Jerf el Ahmar, one may also find a great consensus among scholars on the significance of these places in the construction of past identities (for a detailed discussion, see Atakuman 2014). Rituals and ceremonies involving communal feasts and burials are generally accepted to have been among the physical performances that took place in them. It has been frequently emphasized that not only the construction of these buildings with monumental

columns and lime-plastered floors, but also their ritual burial required communal efforts. In fact, Watkins (2004, 2014) applied the term “theatres of memory” to stress the social and symbolic significance of these communal buildings as well as domestic houses during the Early Neolithic. He points out the importance of performance, whether it be in the acts of construction or in the repeated ceremonies, such as those that accompanied the burial of the dead and the subsequent retrieval, curation, and caching of skulls.

What is clear from this brief summary of research is that much is being discussed on issues concerning how small groups transformed into communities living in larger settlements, and what sort of dynamics or ideologies unified them and prevented intercommunal tensions between them at the onset of the sedentary life in central Anatolia, the Levant, and Mesopotamia. However, none of these issues has yet been discussed in the neolithization of western Turkey, as if the process had already been completed in the east, and the Neolithic communities of western Turkey were the final or replicated form what had been evidenced in the east. In the Neolithic archaeology of western Turkey, the dimension of time has generally been the subject matter of chronologies focusing on when the neolithic way of life spread to the region while space has basically been perceived merely in terms of buildings and their architectural features. This article discusses how Neolithic communities at Ulucak negotiated their identities and also traces whether there were any transformations by way of constructing these identities through the Neolithic period.

Neolithic Ulucak Höyük, with its well preserved building sequence, covers a time period spanning more than a thousand years (6850 cal BC), is a key site in western Turkey. Neolithic occupation at the site is represented by Levels VI through IV. Only the latest building phase, Level IVb, however, has been exposed in a relatively large area (900 m²), while Levels V and VI have so far been excavated in smaller areas—250 m² and 135 m², respectively. Therefore, one should keep in mind that the arguments presented here are preliminary, and may change or require refining in light of future excavations.

The Early Seventh Millennium BC: Lime-Plastered Buildings

The initial settlement in Ulucak (Level VI) is dated to between 6850 cal BC by sixteen carbon dates taken from short-lived species including seeds and animal bones (Çevik and Abay 2016). As has been indicated by the analysis of the cereals and animal bones, sedentary life at Ulucak began with a fully fledged agricultural system (Çakırlar 2012; Erkal 2013). This period has so far been represented by two buildings flanked by open spaces with fire installations. As will be described below, these buildings, Buildings 42 and 43, stand out on account of their lime-plastered and painted floors (Çilingiroğlu, Çevik, and Çilingiroğlu 2012).

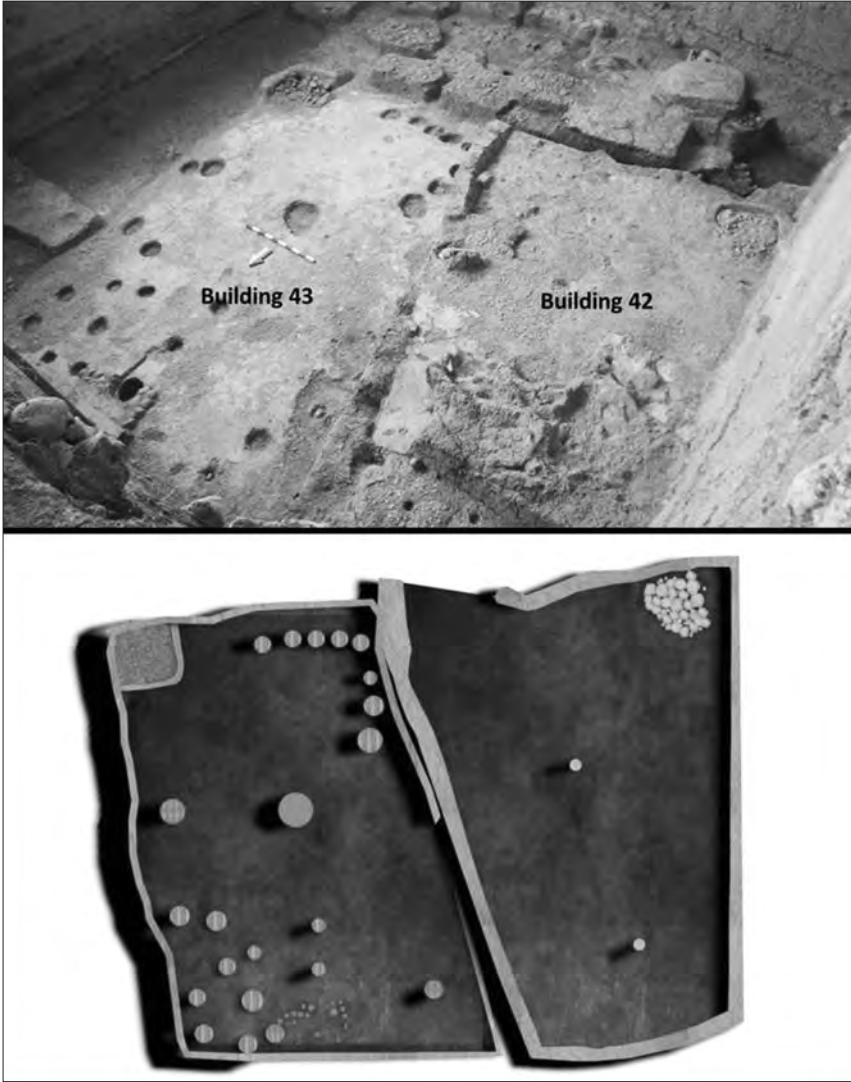


Fig. 2. Buildings 42 and 43 in Level VI.

Buildings 42 and 43 are rectangular structures with mud-slab walls, and are located adjacent to each other (fig. 2). Building 42 was rebuilt three times, and its earliest phase must have been contemporary with Building 43. The investigated parts of Buildings 42 and 43 are about 14 m² and 25 m² respectively. Both have red-painted lime-plastered floors and cobble-paved hearths in one corner. The thickness of the floors is about 2 cm including the pebble bedding. Fragments of wall debris indicate that the walls of Building 42 were also lime plastered and

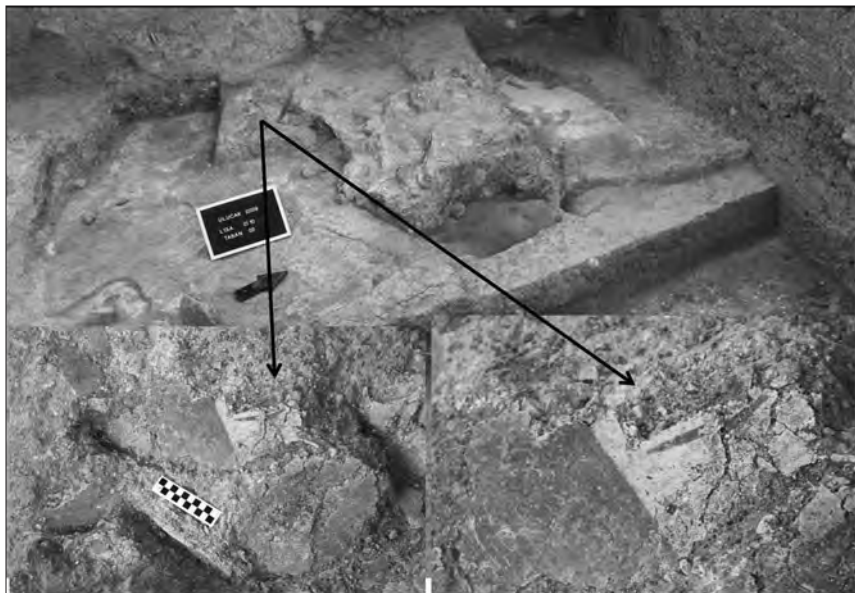


Fig. 3. Painted wall fragments from Building 42.

painted. Although the motifs on wall plasters are hardly preserved they were placed in a panel created by red and cream pigments (fig. 3). Almost no finds were recorded from Buildings 42 and 43 as it seems they were deliberately left clean. The former only revealed a grinding stone and the mandible of an ovicaprid while only a cattle scapula and a bone implement were found in the latter. The scapula and the mandible from the building's floors may well have been related to the abandonment rituals of these structures, similar to a practice that has already been recorded in the houses of Çatalhöyük (Russell, Martin, and Twiss 2009). It is interesting to note that in Building 42 a saddle quern was placed in exactly the same spot as another one after the replastering of the floor (fig. 4). They may have been items to commemorate particular events, however, it is not clear whether they were in use during the building's occupation or after it was abandoned.

The southern parts of these two buildings, where the doorway of Building 42 is also located, is an open area with thirteen circular and cobble-paved hearths and ovens (fig. 5). The use of these fire installations over a long period of time is suggested by their renewal at least three times. Besides botanical remains, a certain amount of burned and unburned animal bones was found to be scattered around the fire installations in low density and seems to be the remnants of food remains after the area was cleaned, rather than the discard of the an entire meal. Two neonatal burials buried near the hearths represent the only human burials

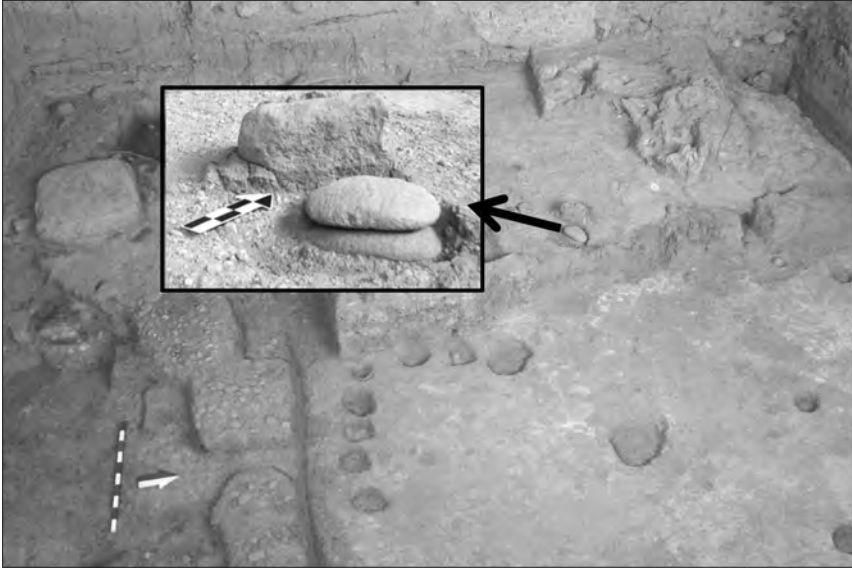


Fig. 4. Saddle querns from Building 42.

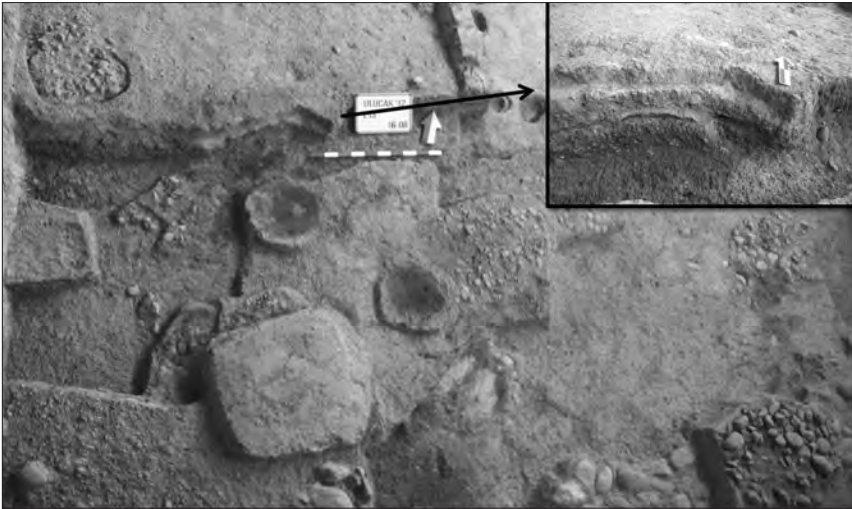


Fig. 5. Fire installations in open spaces in front of Buildings 42 and 43.

throughout the Neolithic occupation in Ulucak. One of these burials was marked by a saddle quern that was laid on top of the skeleton. In addition to these, parts of two more neonatal skeletons have also been attested in the fill of Building 43 and in a deposit immediately in front of the entrance of Building 42. The interment of infants and neonates near hearths, ovens, and in the fill has also been

reported at Çatalhöyük (Moses 2004; Regan 2014; Boz and Hager 2004). Based on some neonatal burials that were found in relation to the construction of a new structure or to change in the use of space at Çatalhöyük, their special ritual placement has also been suggested (Moses 2004). Ethnographic and historic examples indicate that the death of a child releases special power, and their bodies were used as vessels of communication with the supernatural world. The natural death of an infant, therefore, may have provided to the communities, either at Çatalhöyük or Ulucak, an opportunity for unique or specialized rituals (Moses 2004, 2008). This contrasts with attempts to relate infant burials to sacrificial rituals, which are, however, based on purely theoretical grounds (Moses 2008; Abraham 2013).

The recurring occurrence of saddle querns as burial markers and their persistent placement on the floor of Building 42 deserves more attention. In fact, the placement of querns on top of the head or body in burials dating to the Late Aceramic Neolithic from Khirokitia in Cyprus has been reported as a special treatment that was found in a few burials (Knapp 2013: 143). Querns in burial contexts were also found in *Linearbandkeramik* and post-*Linearbandkeramik* cemeteries in western Europe, particularly in the graves of women and children, while those found in Khirokitia were generally related to male burials (Holmberg 1998: 128; Watts 2014: 59). Although querns generally tend to be associated with women's sphere of activities, they are also symbolically related to the affirmation of womanhood. There are different readings for their symbolic significance as well (Watts 2014). Because of the transformative powers of the querns, which turn raw material into usable products or grain into flour, they may symbolize the cycle of life and death and regeneration. One may also see them as a metaphor for the passage of time and the transformation from life to death since the action of grinding gradually wears the stone. As querns are also entangled with cultivation, harvest, grain, and meal, they may also be considered as suitable offerings for the success—or against the failure—of the harvest. It is nevertheless difficult to determine whether querns on building floors and on burials had a fixed or distinct meaning.

Buildings 42 and 43 appear to have been deliberately covered with a green and sterile clay layer. A hearth containing a high concentration of animal bones, including cattle, was inserted into the floor of Building 42, partly destroying it. It is a snapshot of the events that must have taken place shortly before the abandonment of the structure. It cannot be said with certainty if these remnants are the result of a feasting ritual at the time of abandonment, but this certainly remains a possibility.

Similar to the pattern inside the buildings, very few items were found around the fire installations mentioned above. No pottery or any other clay objects were recorded. Besides a few pieces of Melian obsidian and chert, as well as a number

of shell beads, a triangular-shaped pendant made of galena is worthy of mention. A group of chert flakes and two blue chalcedony cores were also discovered in the fill right in front of the entrance of Building 42. Of particular interest is the exceptional quality of the chalcedony cores, which suggests that they were intentionally buried there, paralleling the similar act of the burial of neonatal skeletons inside and outside the buildings.

Whether the lime-plastered floors are unique to Buildings 42 and 43 or if they were applied to all buildings from this horizon—as was the case at Ain Gazal (Banning and Byrd 1987; Rollefson 1998)—is yet to be clarified. Nonetheless, lime-plastered floors—either painted or plain—are found in nondomestic structures throughout the Early Neolithic of Anatolia, such as those from Çayönü, Nevalı Çori, Göbekli Tepe, Aşıklı, and Musular (Özbaşaran 2012: 140; A. E. Özdoğan 2011; Hauptmann 2011: 95–96; Duru and Özbaşaran 2005). A strict line between domestic and special-function buildings, however, can hardly be drawn as both had ritual and symbolic significance from the PPNA onwards. Whatever their function, it is important to note the persistent reconstruction of buildings on the same spot and with the same orientation for several centuries. Intramural burials are also attested only in this initial settlement of Ulucak. Besides their painted walls and floors, and the evidence for ritual practices, a high concentration of hearths and ovens with ash and animal bones located in front of these buildings appear to indicate their communal character.

Food sharing may have been one of the communal activities that took place in and around these buildings. Numerous hearths and ovens suggest feasting activities, although an analysis of animal bones has not confirmed the presence of any major differentiation in the species of animals consumed in this area. Large and dense concentrations of food remains and remains of rare, large, and and labor-intensive species have generally been accepted as markers of feast consumption (Twiss 2008: 420). In fact, most of the animal bones from Ulucak belong to domestic species, including both ovicaprids and cattle. Cattle do not significantly dominate the faunal assemblage. However, ethnographic evidence also indicates that similar foods may be served at daily meals as well as feasts, as different forms of consumption between everyday meals and feasts are not necessarily required (Twiss 2007: 55; 2008: 419). Although it has been reported that wild cattle was particularly selected for ritual consumption at Çatalhöyük (Twiss 2012; Hodder 2012: 172), the limited role of wild animals in subsistence is not unique to Ulucak, but is a shared feature in the early seventh millennium BC sites over a vast geographical zone extending from southwestern Turkey to Crete (Arbuckle et al. 2014; Çakırlar 2012; Ripoll 2013).

In short, the social and symbolic significance of these long-lived buildings, together with several fire installations, seem to have parallels in the houses or

communal buildings found in early Neolithic sites further east that Watkins called “theatres of memory.”

The Late Seventh and Early Sixth Millennium BC: Changing Agents in the Construction of Identities

The second half of the seventh millennium BC at Ulucak, which corresponds to Level V, witnessed several changes. In contrast to the earlier period, ceramic vessels began to be used from the earliest phases of this period while certain clay objects, such as figurines and clay seals, have so far been only found only in the upper phases of Level V, dating to the last quarter of the seventh millennium BC. From the mid-seventh millennium BC onwards, the quantity of obsidian, almost all of which originated on Melos (Milić 2014), sharply increased and formed 20 percent of the total lithic assemblage at Ulucak V. Domestic mammals were still dominant in the faunal assemblage, although they were supplemented by marine sources and wild species towards the end of the period. The culling patterns of domestic animals suggest that dairy products may have become an integral part of subsistence only after the late seventh millennium BC (Çilingiroğlu and Çakırlar 2013: 26).

The building plans in the earlier phases of this period are so far very poorly known, as only open spaces paved with pebbles (only preserved in patches), and a number of hearths have been excavated so far. The latest two subphases (Va–b), however, which can be dated to 6300/6200–6000 cal BC, are characterized by single-room rectangular houses with walls constructed either of wattle-and-daub or of mud slabs without stone foundations. (Çilingiroğlu, Çevik, and Çilingiroğlu 2012; Derin 2005: 85–86, fig. 1). A common feature of these houses in both phases is that they appear to have been inhabited by independent households as indicated by the presence of ovens and/or hearths as well as storage installations in the form of clay bins within each.

At Ulucak and other sites in Aegean Turkey, 6000 cal BC does not mark a cultural break but rather represents a developed form of Neolithic way of life that lasted until around 5700 cal BC. Besides a number of changes, strong continuity in material culture is a remarkable feature of Ulucak IV. No major changes have been observed in the subsistence patterns or in the pottery assemblage (in terms of the ware types and forms), although storage jars and anthropomorphic vessels are now introduced (Çilingiroğlu 2012). Other clay objects, such as figurines and clay seals, also suggest a strong continuity in material culture.

Substantial houses built of sun-dried mud-brick walls on stone foundations characterize the main change at Ulucak (Çilingiroğlu et al. 2004; Çilingiroğlu, Çevik, and Çilingiroğlu 2012). Of the ten subphases of this Late Neolithic horizon, only Level IVb has been excavated widely and the excavations suggest that

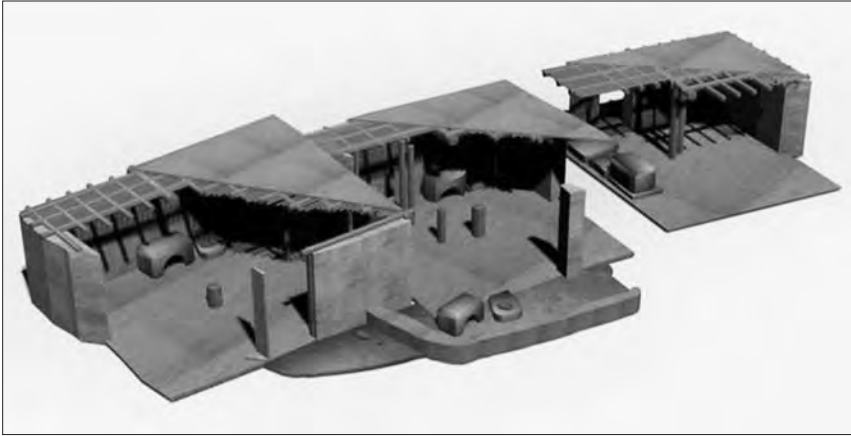


Fig. 6. Reconstruction of houses from Level IVb (5800–5700 cal BC).

houses were arranged along the narrow streets in between. The size of domestic buildings in this phase clearly increased, while internal divisions and enclosed courtyards became an integral part of some houses (fig. 6). Courtyards enclosed by pisé walls, however, may be indicative of the desire for privacy in the Late Neolithic households at Ulucak. Although each domestic unit contains individual cooking, food processing, and storage facilities as in the earlier period, their spatial organization appears to have become more standard, including fixed grinding installations near ovens, and a fixed location for ovens opposite the buildings' entrances.

What appears to be clear is that social structure at Neolithic Ulucak centered on households, which became increasingly independent, both economically and spatially, from at least the late seventh millennium BC onwards. The dense concentration of spindle whorls and loomweights in some houses both in late Level V and Level IV, however, may suggest that a certain degree of codependency continued to prevail among household groups with respect to certain products such as textiles. The absence of building continuity and the lack of burials within or between domestic quarters seem to have been a cultural norm in Ulucak and also in Aegean Turkey in general after the mid-seventh millennium BC. The presence of special-function buildings is attested in this period. Nonetheless, as I explain below, the newly emerging use of portable objects with symbolic significance now appear to have been important agents in the construction and maintenance of both individual and communal identities, and the manipulation of these objects in various ways in different spheres seems to have provided a fluid and relational network in the negotiations of these identities within and between the households at Ulucak.

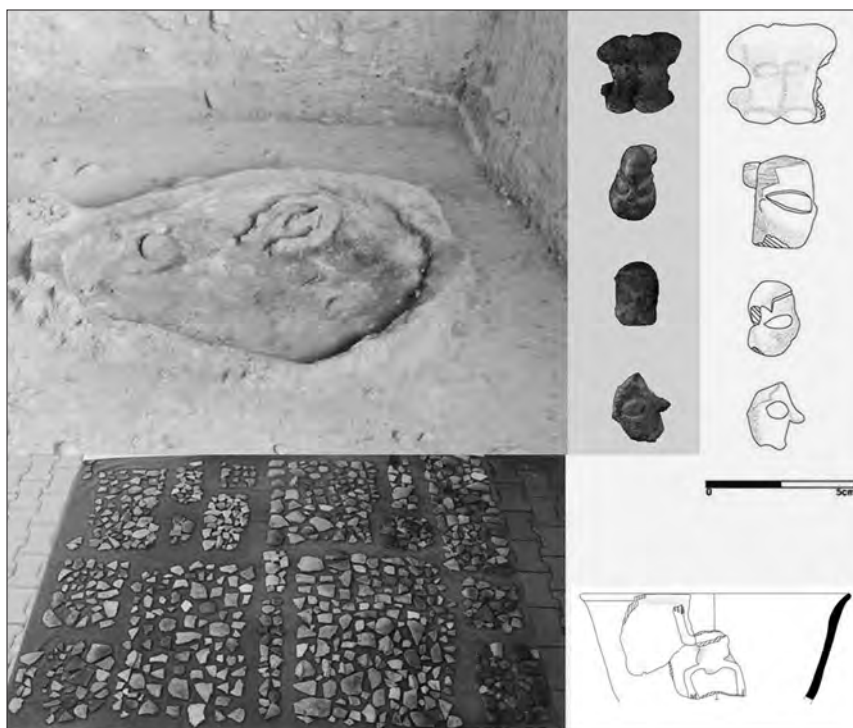


Fig. 7. Building 47 in Level Vb, fragmented figurines and ceramic sherds.

Building 47 in Phase Vb differed from domestic units in its oval form, lime-plastered floor, and its small size, which was ca. 5 m² (fig. 7). This building revealed figurine fragments, including three human heads, a female figurine without a head, and a ceramic sherd with a relief depiction of a frog or possibly a pregnant woman. The building must have been burned intentionally and then converted into a dumping area for ceramic sherds. The fact that the figurines were burnt suggests that they were inside the building before it was destroyed. None of the total of 1,060 ceramic sherds belonging to various ware types bears burning traces; nor can they be reconstructed. It is interesting to note that no figurine heads have so far been found either inside buildings or in the fills between building levels. The original function of Building 47 can be attributed to unusual activities such as initiation rites. The fragmentary nature of the figurines, however, together with the large quantity of ceramic fragments in the secondary use of the building, deserves further attention.

Chapman (2000) argues that many of the incomplete objects, such as vessels and figurines from specific contexts, resulted from deliberate breakage, dispersal, and deposition. He further suggests that social exchanges were carried out with

these material fragments. As these broken objects interconnected with people and places during specific events, they had mnemonic and metaphoric references. It is these enchainment relations and the references attached to them that played an important role in the creation of personhood, production of places, and negotiation of identities. In fact, Chapman's *Fragmentation Theory* was inspired by the Melanesian model of personhood. Contrary to the modern concept of the individual, Melanesian personhood is dividual and partible and the construction of personhood depends on exchange of inalienable things and is therefore highly relational to specific events and interactions (Strathern 1988; Fowler 2004). Chapman's theory is an initial step in archaeology towards tracing how these enchainment relations between people and places were established.

The structured deposition of fragmented figurines from Building 47 can be interpreted within the same framework. The missing parts of the figurines from Building 47 may have been kept by the people who took part in an action there. The meaning of the ensuing deposition of ceramic fragments at the same spot after the building was destroyed is hard to determine: whether it represents an ordinary dumping area for ceramic sherds or the recurring act of ceramic fragmentation in the same place. If the second assumption is taken into consideration, it may show further use of the space for the same purpose on the one hand, and may demonstrate the transformation of the place into an historically important space in the memory of the inhabitants on the other.

Clay figurines have also been found in domestic contexts, and their spatial distribution seems to display a clear pattern (fig. 8). Most of them were found around the ovens, hearths, grinding installations, and storage areas, while some also came from the fill deposits and from the streets. Special contexts may further be detailed. Two buildings in Level IVb revealed anthropomorphic figurines in a bowl together with worked and unworked chert pieces (Abay 2003). One of them was found close to the oven in Building 6 while another bowl was located along the red-painted wall of Building 13. The latter building also revealed a group of clay figurines from a small pit beneath the threshold. The special treatment of the area in front of the walls is also suggested by the anthropomorphic vessel from Building 8. The relation of figurines with productive activities has been further suggested by an idol with textile remains from Building 30 in Level Vb, where altogether sixty-four spindle whorls and a clay seal were also found (fig. 9a). Clay figurines, which were manipulated in various ways in domestic contexts in Ulucak, appear to have mediated production as well as general prosperity and the maintenance of the households, as has also been suggested for other sites (Nakamura and Meskell 2009; Souvatzi 2008: 197–98).

What is of special interest is that anthropomorphism at Ulucak appears not to have been restricted to the figurines and vessels (Çevik 2015). The forms of some marble and shell pendants from Ulucak V are reminiscent of idols (fig.

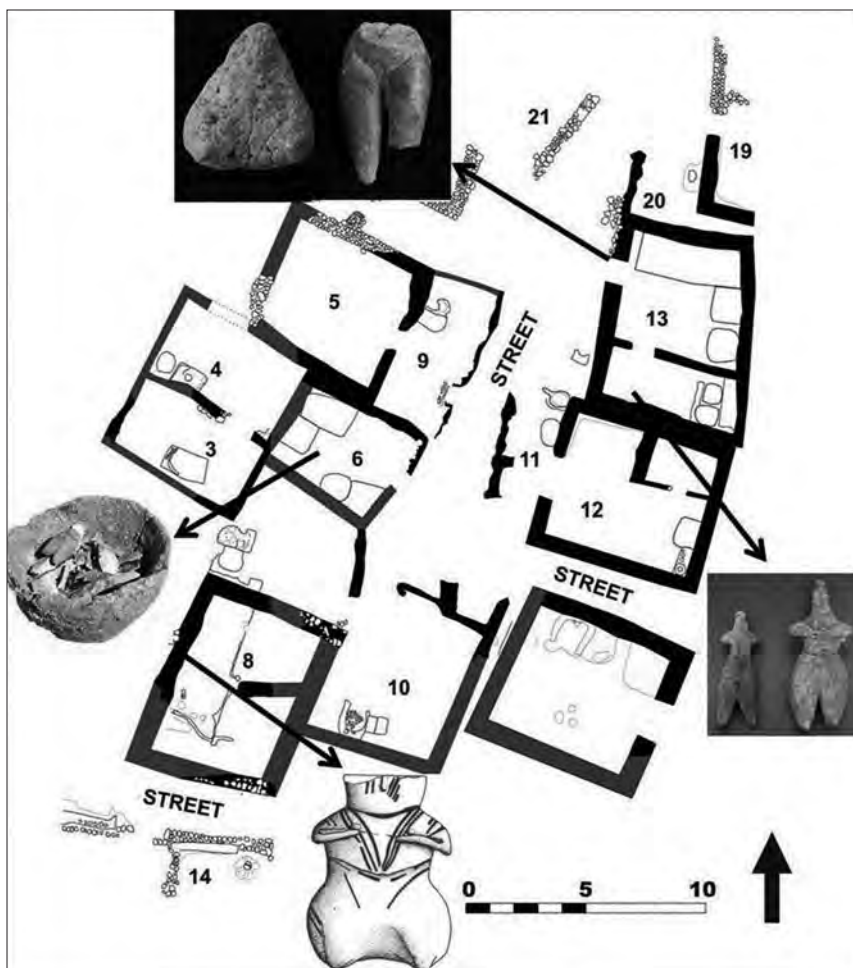


Fig. 8. IVb settlement plan and distribution of clay figurines and anthropomorphic vessel.

9c–d). By the same token, the repetitive designs on a clay seal (fig. 9b), which was found in Building 30 within the same context as a clay idol with textile remains and several spindle whorls, can also be claimed to represent an idol. Further contextual evidence for close relations with a clay seal and several loomweights came from Building 13 in Phase IVb. The possible use of clay seals as stamps for the decoration of textiles in Ulucak has already been recognized (Çilingiroğlu 2009). Here a particular emphasis can be placed on the strong relationship between the clay idol, the clay seal with the image of an idol, and textile production. The textiles, together with pendants, vessels, and figurines themselves, appear to have constituted a symbolically interrelated set, which were fragmented into functionally heterogeneous objects. What this anthropocentric network implies is that each of

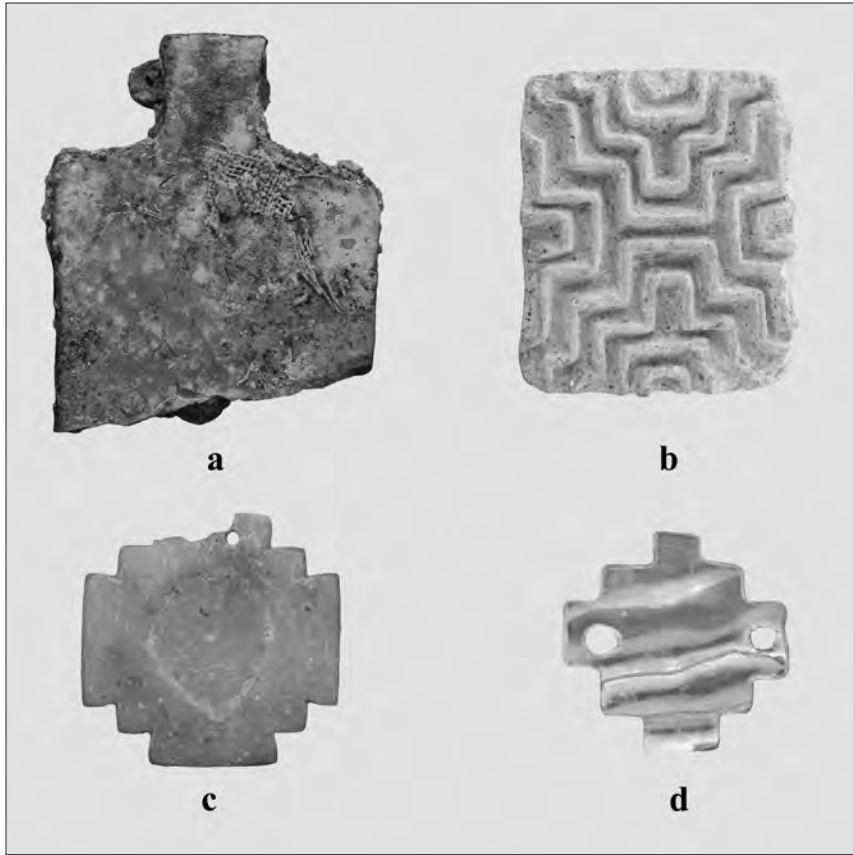


Fig. 9. (a) clay idol with textile remains from building 30 in Level Vb; (b) clay seal; (c, d) marble and shell pendants.

the components of the set may well have been an agent in the construction of the communal identity and personhood of the Ulucak Neolithic inhabitants. How these *things* were embedded in social relations and what identities based on age, sex, or status were negotiated within these relations cannot be predicted. One should also not exclude the transformative power of body ornaments and dress in the construction of identities during rituals and ceremonies (Fowler 2004). Inspired by Gamble (2007: 143), it can be suggested that this set is nothing more than a congealed net of the social network of the Ulucak's Neolithic community. There remains little doubt that there may have been different and further such sets in Ulucak or elsewhere that were dispersed through the material world, which one cannot grasp only by tracing them in architecturally restricted areas.

To sum up, evidence from Ulucak suggests that the production of most of the portable objects, including clay seals, figurines, pendants, loomweights,

spindle whorls, and anthropomorphic vessels, either emerged for the first time or increased in number from the last quarter of the seventh millennium BC onwards, if not a little earlier. I have tried to show how these objects were meaningfully interlinked and embedded in social relations at Ulucak. If one accepts their symbolic significance in personal, household, community, and intercommunity levels, then one may also assume that similar and distinct identities in each level might also have been constructed and maintained by their agency. The absence or scarcity of clay figurines and clay seals in Çukuriçi in Aegean Turkey and also in the Neolithic sites in the northwestern Turkey can be cited as an example for these distinct identities at an intercommunity level, rather than being manifestations of “multiple packages” (M. Özdoğan 2010). The emergence of these portable objects in early Neolithic sites in the east have tended to be related the rise of the independent households. It is true that the whole set of these portable objects are seen at Ulucak when households were characterized by the economically independent units as has shown by the presence of features related to food storage, food processing, and cooking in each domestic unit. As the domestic quarters dated to earlier than 6300 cal BC at Ulucak have yet to be excavated, it is still difficult to correlate these objects with the nature of the households. Nonetheless, the clear absence of these objects during the early seventh and possibly mid-sixth millennia cal BC at Ulucak still indicates to us that the social order and the nature of social relations must have been different during this period than during the later periods at the site.

Final Remarks

The recent discovery of lime-plaster floors in Fethiye-Girmeler pushed back the initial occurrence of these features in southwestern Turkey to as early as the late ninth/early eighth millennium BC. These features were continuously built at the site until the late eighth millennium cal BC (Takaoğlu et al. 2014). The basal levels of Hacılar, Bademağacı, Ulucak, and possibly Çukuriçi also indicate that buildings with lime-plaster floors in western Turkey were becoming a common feature through the end of the first half of the seventh millennium BC (Mellaart 1970: 2–5; Duru 2012: 14–15 and personal communication to Barbara Horejs). The significance of the buildings with painted or unpainted lime-plaster floors in western Turkey has remained unclear as they were all explored in restricted areas. However, one of the buildings at Girmeler, dated to the late eighth millennium BC, revealed nine superimposed layers of terrazzo floors and eight layers of burned debris (Takaoğlu et al. 2014: 115). The burnt debris between the floors suggests that the buildings were intentionally burned at the end of their use. It is of interest that scattered seeds were found in almost all burnt debris deposits. It has been suggested that the building was ritually and regularly burned in order to

mark the end of the “life” of the structure. As the structure in Girmeler is located in front of the cave, the specific location of the building has also been related to the symbolic world of the dead, the womb, and new life.

Reconstruction of buildings on the same spot for a longer period and the recurring act of plastering the floors of the buildings with lime are shared features at Ulucak and Girmeler. However, distinguishing traits between the two sites can also be observed, such as the absence of sealing the lifetime of buildings with burning at Ulucak, and the lack of painted walls and floors at Girmeler. Although the buildings, in terms of their size, symbolic storage, and related rituals and ceremonies, may have been diversified within and between regions, the symbolism of the lifecycle and the effort to create a collective memory through recurring acts and performances appear to have been a constant in Early Neolithic societies until the mid-seventh millennium BC in a wider geographical area that included western Turkey.

Building 47 at Ulucak suggests that the sense of place-making was still important at the site during the late seventh millennium BC. Nonetheless, an intermingling set of new objects now seems to have played a more active role than the places themselves in the construction of social relations and negotiations within the community at Ulucak. More precisely, a number of portable objects, such as figurines, clay seals, pendants, and pottery, starting from at least around 6300–6200 BC, were deeply embedded in social relations, and by their manipulation in complex ways in various spheres—be it houses, nondomestic quarters or on bodies themselves—they appear to have become the main actors in the construction and maintenance of identities both in the household and on the community level.

Continuation of some symbolic phenomena, however, can also be claimed at Ulucak. The lime-plaster floor of Building 47 may suggest the particular significance of lime plaster for the Ulucak community throughout the Neolithic, as it was clearly not applied to the floors of domestic buildings. The strict border in the use of lime plastering between the domestic and communal buildings may indicate that its use may have acted as a means of expressing differential status and as a way of maintaining social order (Clarke 2012). Based on the idea that the color of material objects in the social world have relational quality (Young 2006), a relationship can be established between the red- and cream-painted wall plasters and floors of Building 42 and the red- and cream-slipped pottery from the following period at Ulucak. The latter may suggest the continuity in color symbolism at the site.

By establishing the relationship between the demise of communal buildings and the emergence of more independent households in the end of PPNB, Atakuman (2013, 2014) points out that the symbolic expression shifted from communal buildings to more portable media in the seventh millennium BC, and a more complex manipulation of social relations within and between commu-

nities were ensured by these diverse objects. It is important to note that most of these media appear to have been integrated into the daily life of the Ulucak inhabitants a few centuries later than the eastern communities. There remains little doubt that these media, including figurines, seals, pottery, and so on, were also manipulated within the Ulucak community in very complex ways in the construction and maintenance of social relations, as has been suggested by Atakuman. However, the question whether there is a direct relationship between the emergence or adaptation of these media and the changes in the household structure at Ulucak still awaits new data for further clarification.

The shift from communal buildings to portable objects at the end of the PPNB in the Levant and Mesopotamia is often related to the emergence of socially and economically independent households that were able to form new types of more individualized relations with other groups without reference to the former communal regulations. Specifically, the increasing reliance on domesticates and agriculture is thought to have been influential in the emergence of this new type of relatively more independent social organization of households (Kuijt et al. 2011; Atakuman 2014). A general glance at the initial occupation at Ulucak (Level VI), might prompt one to adopt a similar explanation based on a comparison of subsistence and material culture between the two geographical spheres. It is true that at Ulucak we observe architecture together with subsistence based on domesticates; however, the use of these early buildings also suggest that they may have supported communal use and therefore resist interpretation as houses of independent households. Obviously, the area excavated is still very small and we may be able to identify individual households in the future; nevertheless it is important to note that the evidence also suggests that communal buildings were constructed during Ulucak's initial occupation at a time when such communal building construction was disappearing in the east.

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Adaptation as a *Constante* in Early Farming Village Economy: An Eight-Thousand-Year-Old Case

JACOB ROODENBERG

Abstract: From prehistoric times until today farming has always been reactive to external conditions. These may result from environmental or human factors, but the fact remains that in order to perpetuate a sufficiently high production level to sustain his dependents, the individual farmer needs a great deal of flexibility and creativity. This was certainly the case of the early farming village of Ilipinar in northwest Anatolia. The community was confronted on several occasions during its lifetime with far-reaching choices, such as the introduction of a new building mode and consequently a reshuffle of the village plan.

Keywords: Ilipinar, Neolithic, mud-slab house, antler tools, timber frame walls, mud-brick building, northwestern Anatolia

In a farming economy, change and adaptation are constant and inevitable facts of life.¹ America's Midwest in the second half of the nineteenth century was the scene of a revolutionary shift from cattle breeding to plant cultivation brought on by the introduction of barbed wire, which forced the end of cattle drives from south to north, as a consequence of which the prairies were turned to cultivatable land. At times current European agricultural policy has forced cattle breeders and cultivators, hindered by incessant bureaucratic interventions, to open their lands for agrotourism, and to the elderly and handicapped, in order to secure their income. Just as today, ancient farmers had to be enterprising multitaskers able to adjust their survival strategies to survive.

The Neolithic site of Ilipinar in the Iznik Lake Valley provides an early example of change and adaptation in the subsistence pattern of early farmers (fig. 1). One might well be criticized for returning to this village time and again, however, its well-preserved remains, uncovered during a long-term multidisciplinary research program have yielded an unusually rich and reliable data collection that perhaps justify such persistence.

1. This contribution is based on the article Roodenberg 2012.



Fig. 1. The eastern Marmara Region. Black triangles show the sites discussed in the text.

Pioneering Stage

The first migrants arrived in the Iznik Lake Valley around 6000 BC and settled near a spring now known as Ilipinar. The single-room dwellings they built had a ground plan of roughly 30 m² and were of two types (fig. 2). Some had mud-slab or sod walls while most were erected with timber-frame walls: so-called post-wall houses built of wooden posts closely set in ditches and smeared with mud coatings (Roodenberg 1995, 2008b). Among the first constructions we uncovered at the site was the ground plan of a sod-walled building surrounded on three sides by a courtyard covered with a thick layer of scattered occupation debris (fig. 3). This *in situ* debris allowed us to draw conclusions about the subsistence level of the newcomers.

From their first settlement, the inhabitants of Ilipinar were agriculturalists who ran a mixed farming economy. Seed samples collected in the courtyard of the sod house point to cultivation of hulled and naked barley, emmer, einkorn, lentil, bitter vetch, pea, and grass pea (Cappers 2008). In addition, the inhabitants were shrewd stockbreeders, as evidenced by the thick piles of butchering refuse from cattle, sheep, goat, and pig that littered the yard. One might expect a fully established farming village at the end of the seventh millennium. Surprisingly, however, there was a high quantity of wild animals in the faunal record—almost 50 percent—indicating that these farmers were more than occasional hunter-gatherers. Courtyard finds indicate that the occupants of the sod-walled house collected fruits such as pistachios and figs, and huge quantities of snails. The

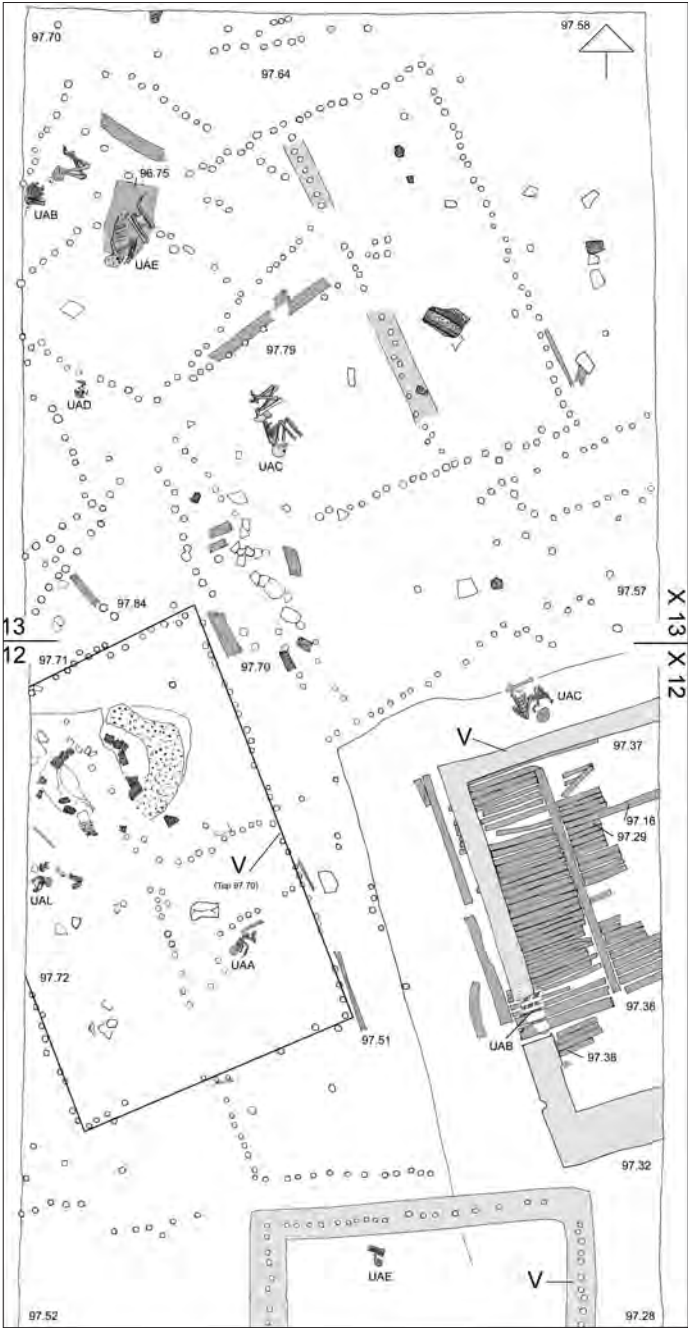


Fig. 2. During its first centuries, the village comprised mud-slab, sod, and, especially, post-wall houses. Some of the dwellings had wooden floors.

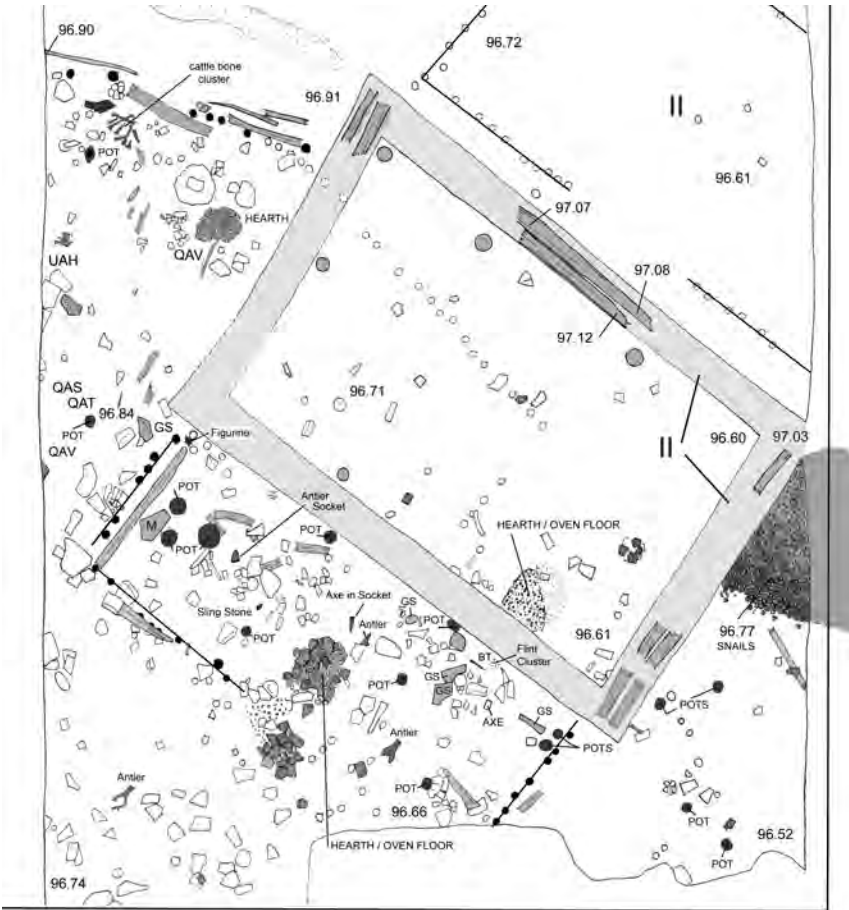


Fig. 3. One of the first buildings was a sod-wall dwelling with a courtyard on three sides. Against the long wall below vestiges of a shed, a lean-to recognizable in the plan by the post-holes of its walls..

overall impression is of a subsistence model that testifies to a pioneering way of life. Multiple resource exploitation such as this is characteristic of an initial phase of settlement in which migrants, wandering with their herds (possibly small, or reduced along the journey) and with their knowledge of cultivation, arrived with the intention of settling, and in the process were forced to adapt to the local circumstances, in this case, an unspoiled forested landscape. They had to shape a new environment, cut open space, build shelter for their people and animals, and lay out arable fields, all the while exploiting the wild resources at hand. Making use of the natural food resources was not a whim but a necessity, as crop yields must have been low in the beginning, and livestock was probably reduced. Em-

bracing the local conditions was certainly the appropriate way not just to survive but to establish a new community.

The general consensus is that the eastern Marmara population had its roots in central Anatolia. This opinion is based on parallels in certain categories such as pottery, but given the ambiguity in the interpretation of cultural similarities corroboration through scientific methods such as DNA analysis of human and animal remains is needed.²

According to the excavation records of Menteşe and Barcın, sedentary communities appeared in the middle of the seventh millennium in the eastern Marmara Region (Roodenberg et al. 2003; Gerritsen, Özbal, and Thissen 2013). Thus, the oldest settlements in the eastern Marmara Region are restricted to the plain of Yenişehir (fig. 1), the center of which was covered in prehistory by swamps and a shallow lake (Kayan 1995). Separated from the Yenişehir Plain by a low mountain ridge to the south, the Iznik Lake basin stretches out. At its western edge lay Ilipınar, founded around 6000 BC. The community of Ilipınar may have been an offshoot from the population of the hitherto inhabited Yenişehir plain, a presumption that is not contradicted by cultural comparison at first sight. In any event, with the knowledge from Barcın and Menteşe one should realize that these potential “donor villages” were fully operating farming communities.³ If our villagers originated from these or comparable settlements, which is probable, it implies that the first settlers of Ilipınar were experienced cultivators and stock-breeders. In contrast, their intensive exploitation of the wild environment must be taken as a temporary means of supplementing the community’s diet.

The courtyard of the sod-wall building already mentioned enabled us to investigate a thick layer of accumulated household debris that included a variety of artifacts (fig. 3). The most numerous types were animal bones (in the form of butchering products), potsherds, chipped flint debris, and also fossilized wood fragments from planks and posts. Spread over the courtyard were mortars, grinding and polishing stones, pottery vessels, bone tools such as needles and spatulas, but also ground and polished stone axes/adzes, a few animal figurines, loom weights, and pendants shaped from clay. Antlers, antler fragments, and artifacts made from antler, in particular sockets for polished stone tools, were numerous. Obviously, the inhabitants were specialized in the manufacture of sockets cut out of antler (fig. 4).

2. DNA studies on ancient human remains are still in an incipient phase today recalling the first decennia of Radiocarbon dating causing confusion among archaeologists. Laboratories currently working on human genetics are involved in research aiming to expose global patterns of biological relationship, while archaeologists would often be better served if geneticists were also focused on issues of kinship in local and regional populations. Unfortunately, campaigns for human samples occur in a competitive atmosphere where the rules of fair play are sometimes violently ignored.

3. In two recent articles in *Nature* it is determined for the first time through ancient DNA analysis that Neolithic farmers from northwest Anatolia—to be specific, those from Menteşe and Barcın—constituted a genetic source of Europe’s first farmers (Mathieson et al., 2015; Mathieson et al., 2018).

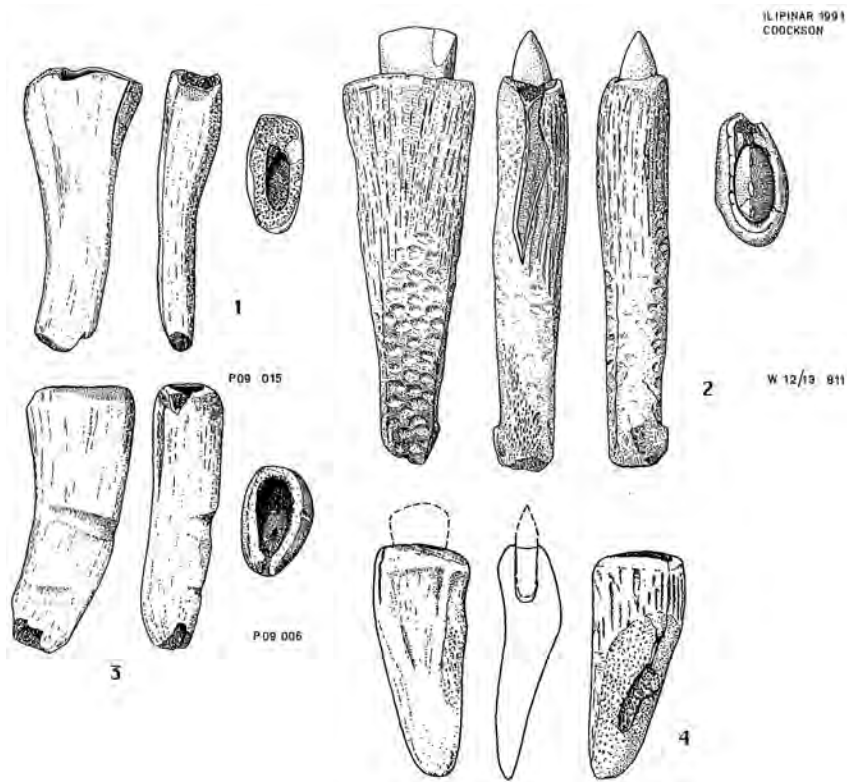


Fig. 4. Several shapes of axe sockets. Numbers 2 and 4 have been worked in a tapering form by chipping and grinding one side of the segment from half way down the shaft to the smallest end. Opposite to the chipped and ground side a bud was sometimes cut out (no. 2).

Antler has qualities that make it suitable for heavy-duty work with axes. The axe sockets made in the courtyard probably satisfied their users so much that the same kind remained in use for centuries. Its manufacture was as follows: from an antler ca. 8 to 15 cm long, a slightly curved or straight segment with an oval section was cut and worked into a tapering form by chipping and grinding one side of the segment from half way down the shaft to the smallest end. At that end opposite to the chipped and ground side a bud was sometimes cut out. At the larger end a hole was made by cutting and perforating the spongy core as deep as needed to slide the axe blade two-thirds of the way inside. This way the cutting edge of the axe ran in the longitudinal axis of the socket's oval section. Subsequently the socket was fixed with its cutaway side more or less perpendicularly on a wooden haft. In order to align the cutting edge of the axe with the haft, the haft was supposedly flattened by chipping and grinding the spot where the flattened



Fig. 5. Houses were arranged in a radial plan focused on the spring (beyond the left corner below). Four plots or parcels are recognized (I to IV); with exception of III each parcel shows the lay-out of at least four overlapping building plans (see for instance parcel II: H1 to H4).

socket side must be fixed. In spite of the frequency of wood remains at the site, hafts were never found, so the fixing technique can not be verified.

Following on the pioneering stage of the settlement, we notice a steady economic growth, indicated by, among other things, the expansion of the village. At the same time, house construction, village plan, and material culture remain much the same. A fundamental change in the community occurs only three centuries later, when the occupants introduced a new building method resulting in an entirely different village layout (Roodenberg 2008a).

In the course of three hundred years following the initial settlement by the original settlers, the village consisted predominantly of post-wall dwellings. The houses, set in a hemicycle around the perennial spring, were repeatedly renewed

with an estimated frequency every twenty-five years (fig. 5). The renewal consisted of constructing a building of similar size on the same plot the new walls avoiding the post stubs of the old ones (see also Roodenberg 1995 fig. 14–22). This continuous rebuilding of dwellings on the same plot is in my view a testimony of property transfer from one generation to the next.⁴

Meanwhile, the economy of plant cultivation increased. This is not only demonstrated by the record of charred grain sampled in courtyards and inside houses, but also by the appearance of built-in storage facilities. While dry food storage capacity in the form of ceramic vessels was low at the incipient farming stage (ca. 60 liters in the pioneer dwelling), a century later storage facilities including integrated bins allowed storing quantities three times bigger. Simultaneously the contribution of hunting and gathering to the diet diminished and by the time of the subsequent climax stage the intake of animal proteins depended almost entirely on the consumption of domestic life-stock.

Climax Stage

At the climax stage, ca. 5700 BC, a number of evolutionary lines had come together. The most conspicuous is doubtless the shift in building technique. For three centuries, freestanding post-wall houses were the standard type of dwelling. These simple, single-room buildings had walls consisting of a mud-coated framework of posts closely set in ditches and interlinked with ropes and laths.⁵ Provided with floors of compacted mud sometimes overlaid with wooden boards, they were traditionally covered with thatched saddle roofs supported by central beams. Such buildings could quickly be set up in a small and closely integrated community, similar to the way American barn raising is performed. In contrast, the subsequent introduction of molded mud-bricks allowed an entirely new notion of construction, but one requiring specialized skills and also the involvement of a certain level of manpower. It is thought that the latter requirement could only be fulfilled by a sufficiently large village population. Apparently, this number of residents was reached at the climax stage, when the village had expanded to form a built area of 3,000 m², three times the initial surface, and the community included an estimated 200 to 250 inhabitants. With this shift in building technique, not only houses but also the settlement plan underwent a thorough metamorphosis.

4. More than forty radiocarbon dates from the first three centuries of occupation allow an estimation of the average duration of Ilıpınar's post-wall buildings at ca. 25 years, which is the life span of one generation.

5. It should be emphasized once again that this construction technique is different from wattle-and-daub because of the absence of wickerwork linking wall-posts. In contrast to Menteşe, genuine wattle-and-daub panelling was never noticed in Ilıpınar's post-wall buildings. The term wattle-and-daub is often carelessly used; for a correct definition see Wright 2005, 2: 24.

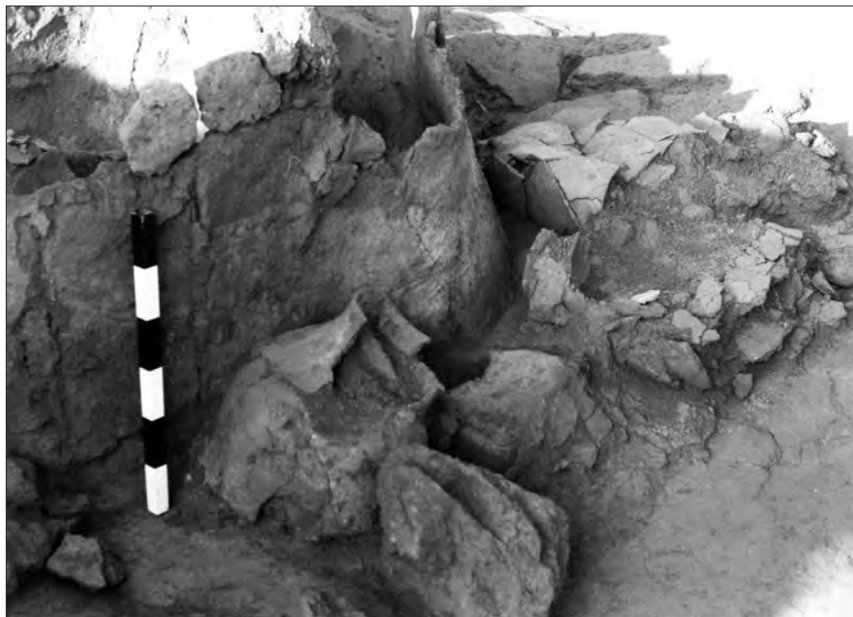


Fig. 6. A bin in one of the boundary houses.

The increase in storage volume and food-preparation facilities constitutes another line of evolution. Not only were pottery vessels and baskets used to contain surpluses of dry food, but mud-coated bins or silos were constructed for this purpose as well (fig. 6). These bins, built in room corners, were intended to hold large quantities of grain. Owing to the diversity of containers, households could easily store a year's supply of grain, assuming that a nuclear family ration was a little more than one thousand liters (Halstead 1981; Bogaard et al. 2009). The conclusion is that the storage capacity of the individual village house had increased up to at least twelve times over three hundred years, indicating the growing impact of plant cultivation on the subsistence economy. Ovens, hearths, bins, wickerwork baskets, an abundance of ceramic jars, and grinding facilities all point to a well-organized system of storing and processing large quantities of agricultural products. Obviously, if we are to judge from the volume now being stored, crop cultivation had become a major pillar of the village economy; this was not because of an increasing array of cultivated plant species, which remained on the whole unchanged. This change in emphasis probably resulted from a combination of factors in which favorable environmental conditions and increased farming expertise (field manuring, crop rotation) may have played a decisive role. It should be added that animal husbandry was presumably not much less important, with cattle herding the predominant component (Buitenhuis 2008). This fact may be linked to the exploitation of livestock for milk. Northwestern Anatolia is considered one of the

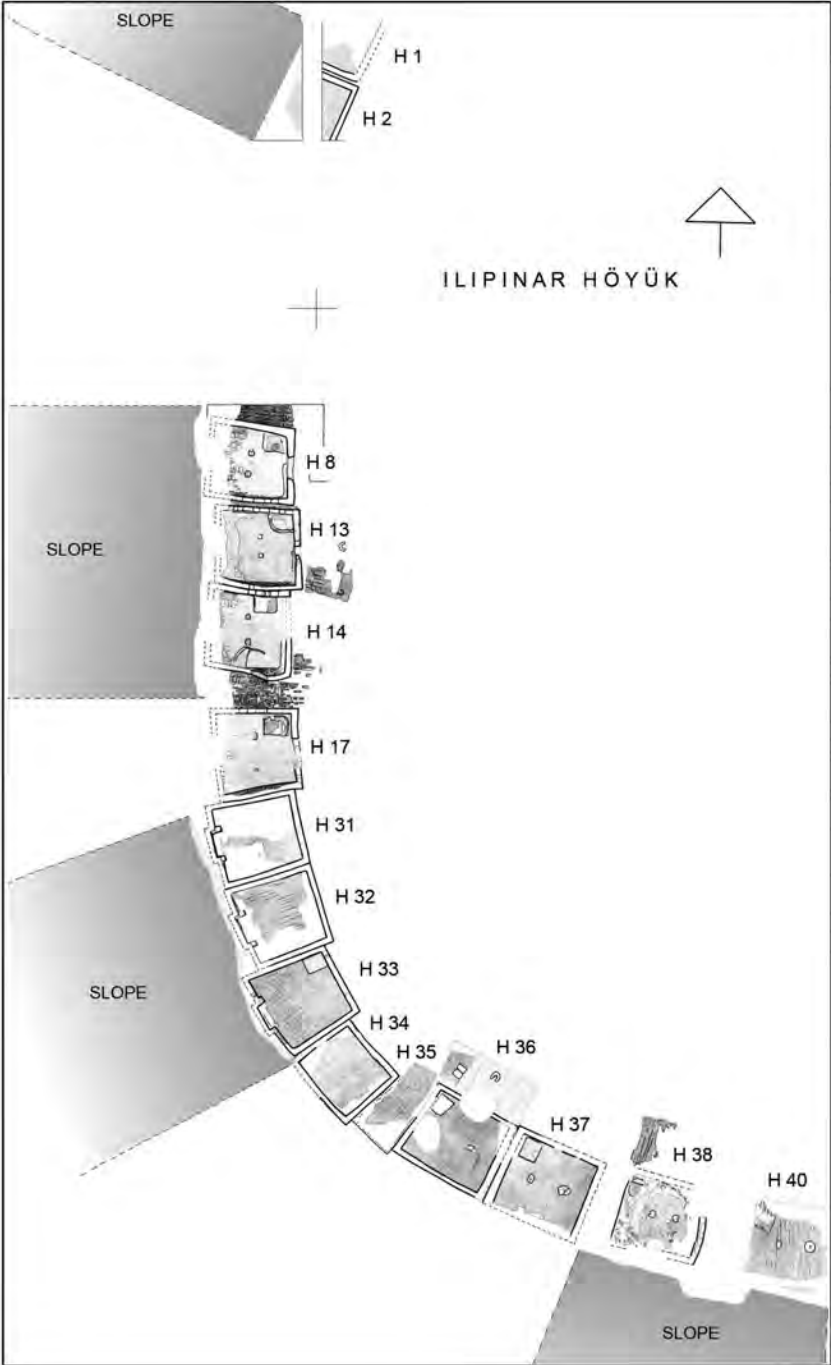


Fig. 7. Investigated section of the boundary buildings surrounding the village center.



Fig. 8. Artist's impression of the boundary buildings based on the ground plan shown in figure 7.

regions where the “secondary product revolution” can best be traced (Evershed et al. 2008). The investigations at Menteşe have already provided indications for such exploitation through the killing patterns of cattle and possibly also sheep (Gourichon and Helmer 2008), while Barcın has subsequently proven that pottery vessels contained dairy products (Thissen et al. 2010).

Finally, the village layout underwent a complete transformation consequent to the introduction of the above-mentioned new building method with mud brick (Roodenberg, 2008a). We have seen that the settlers at Ilpınar lived in single dwellings built of sod or post framework, each building free standing with a courtyard. These courtyards were multitasking areas for tool manufacturing, animal corralling, butchering, and food processing; and in these courtyards people also found their final resting-place. In the new village the houses were no longer solitary, but adjacent, set in pairs or in long rows plan (fig. 7). Of the village center of the climax stage little has survived due to modern agriculture, but we succeeded in unearthing a large part of the outermost ring of buildings. This alignment of buildings had been set on some sort of earthen embankment and ran around the village center. The embankment rose a few meters above the surroundings and seems to have accentuated the notion of a boundary between the community and the outside world (fig. 8). Just behind these houses there were courtyards with wooden platforms supporting household utensils such as hearths and vessels. Bordering on these courtyards was a large but fenced open space where animals were kept, to judge from a thick layer of organic remains (dung), most probably mixed herds of sheep, goat, and cattle.

Hence, from this climax stage the overall picture that emerges is a village that had become more compact than before and a community likewise living in closer harmony and sharing various commodities. This sharing of commodities

may also bear on the funerary customs. The conspicuous absence of graves in the climax stage of the village contrasts with the burial practices of the pioneer stage when people were buried in courtyards. Therefore, I surmise that by analogy with the occurrence of a cemetery at nearby contemporaneous Aktopraklık (Karul and Avcı 2011; Alpaslan Roodenberg 2011) the inhabitants of our climax stage village also may have buried their relatives collectively at an appropriate location outside the settlement. In this respect it should be noted that the cemetery of Aktopraklık is related to a stage of the site's history that is marked by alignments of buildings quite similar to the ones that were investigated at Ilıpınar (compare figure 7 with Karul and Avcı 2013: fig. 14).

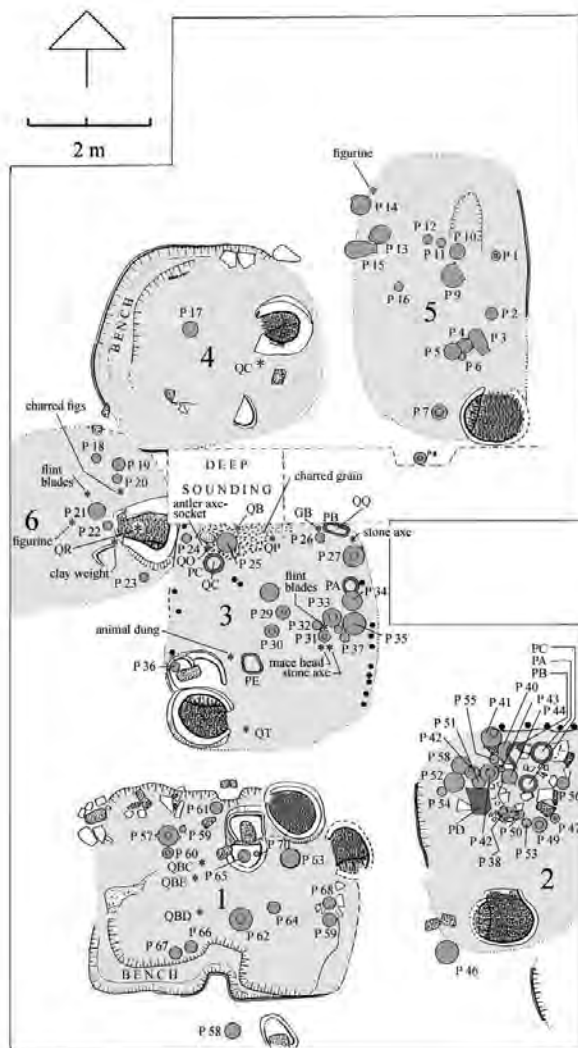
To summarize, there are striking differences between the successive pioneer and climax stages in the use of space and construction methods at Ilıpınar. It is tempting to link these differences with changes in socioeconomic realities. That is, increasingly effective farming seems to have led to an alteration of the community's social organization. What was the need for such reorganization? Was an adjustment required to cope with the increasing population? Apparently, adjustment was a recurring phenomenon in an early farming settlement such as Ilıpınar. Initially there was adjustment to the environment, subsequently to a growing village population, to depletion of agricultural land and so on. In reality each community had to respond in its own way to the specific problems that were met. Hence, no settlement was identical to another despite the common features of a loose cultural framework.

Abandonment

The last change occurred when the inhabitants vanished from sight after five and a half centuries of village history. This happened after a fire burnt down a substantial part of the village. Up to this point we are able to find credible explanations for the changes and adjustments that had taken place over the centuries at Ilıpınar, but what may have caused the entire population to move away instead of rebuilding the living quarters is a matter of conjecture. Several explanations have been considered: from hostile expulsion to exhaustion of the arable land. However, according to anthropological research, a possible explanation could be the high child mortality resulting from anemia. This disorder has been observed in three of the four broadly contemporary settlements investigated in the eastern Marmara Region (Alpaslan Roodenberg 2008, 2013). All three were located near lake banks with marshy conditions—a breeding ground for the malaria mosquito—and demonstrate high levels of infant mortality. Unfortunately demographic data from Ilıpınar stem only from the first half of the occupation, not from the time immediately preceding the abandonment of the village.⁶

6. Even as recently as the past century the banks of Lake Izni were known for rampant malaria (Alpaslan-Roodenberg 2013, citing Göksu and Timms 1999).

Fig. 9. Six seasonal shelters equipped with basic commodities and utensils containing different sowing seeds.



Whatever may have been the reason for deserting this location—whether unhealthy living conditions or something else—there is conclusive evidence that cultivation of the nearby fields was resumed, if not actually continued without any real break. On the west flank of the mound a cluster of cabins built on the vestiges of the former village ruins, marked the very end of traditional occupation (fig. 9). These were small, usually semisubterranean huts provided with what one would call a survival kit of commodities—a small oven, a grinding installation, and vessels (Roodenberg 2008a). The vessels contained seeds from the same cereals and pulses known from the climax stage. However, a curious detail is that the seed samples were unusually pure—field weed seeds were almost

complete absent—indicating, according to the palaeobotanist's deduction, that the samples must have been purposely cleaned, as they were intended for sowing. In other words, the vessels in these cabins stored not food but sowing seed (Cappers 2008). This has led to the thesis that these later rudimentary cabins, contrasting so markedly with the earlier sophisticated village houses, were not year-round dwellings but temporary shelters for people who carried out seasonal work in the fields. Since each hut had a set of seed samples, the natural conclusion is that agriculture here was a family-run business with each family tilling its own land.

Another thesis, put forward in earlier publications, suggests that these pit dwellings point to the passing of newcomers who briefly settled on the ruins of the village and put the land back into cultivation (Roodenberg 2001: 242). These people are eventually distinguished from their predecessors by new shapes in the pottery repertory. However, their arrival has left so little evidence in northwestern Anatolia that these migrants seem to have evaporated. Hopefully future fieldwork and pottery study in the region will help to determine which thesis comes closest to the past reality.

Conclusion

Around 6000 BC, the pioneers who settled near the spring of Ilipinar had full knowledge of crop cultivation and stockbreeding. After an initial period of adjustment to the local environmental requirements, during which subsistence depended to a large extent on hunting and foraging, these pioneers laid the foundation for increased agricultural production. Presumably as a result of this, the settlement area tripled over the course of three centuries. Thereafter a second adjustment was implemented: a reshuffling of the village layout, which developed into a more clustered plan with dwellings set in rows, with a shared animal pen, and possibly also—and this is mere speculation—with a communal cemetery. The village was now surrounded by a row of boundary buildings that could not act as an effective defence system but rather served as a symbolic border to demarcate the village from the outer world. The last stage was the inhabitants' shift from the village to a hitherto unknown location, followed by seasonal occupation in the form of small, rudimentary dwellings—possibly satellites of the nearby re-located community. What may have been behind this desertion, though, remains a mystery.

Ilipinar thus provides a good example of an early farming village where adaptation repeatedly preserved the community. No doubt change and adjustment were recurring factors in the survival strategy of prehistoric communities. It is the archaeologist's task to expose these adaptations and explain the relation between their cause and effect.

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An Entanglement Approach to the Neolithic of the Aegean Islands

BURÇIN ERDOĞU

Abstract: The concept of entanglement has recently gained significant popularity in contemporary archaeology. In shifting attention away from the anthropocentrism of Humanism, this approach can be seen to subscribe an overlooked question of the “thing,” and the “New Materialism” movement. The concept of the entanglement advocates that human–human, human–thing, thing–human, and thing–thing relationships and interrelationships create dependence and dependency. This article applies the entanglement approach to the prehistoric island communities of the Aegean, especially Neolithic Gökçeada, in the second half of the seventh millennium BC. It explores how Neolithic island communication relied on how things depended on other things and on humans. Islanders were separated from and connected to the lands and peoples that surrounded them. Maritime interaction involved communications between distant peoples, and the vessels came to be seen as essential actors in that they connected people and things.

Keywords: entanglement, island archaeology, Neolithic, Actor Network Theory, Gökçeada, Uğurlu

Ian Hodder (2012, 2014, 2016) discusses human “entanglements” with material things, and the relationship between things and humans conceived as a complex and ever-increasing net of interdependencies. During the past fifteen years, there has been a distinct shift in social science towards studying things in themselves, in the sense that they are objects that have the ability to stand on their own. Most often associated with Latour’s Actor Network Theory, an effect of this approach is to de-center human agency and explore the agency of nonhuman actors across networks (1993a, 1993b). The fundamental idea behind this renewed concern with materiality may have been inspired by Gell (1998), who has also argued that artifacts have agency. Material culture studies are focused on how things make people instead of how people make things. They are also focused on how things mediate social relationships and how they can be understood as having a form of subjectivity, being, and agency of their own (see Knappett and Malafouris 2008).

The primary idea of the entanglement approach argues that human–human, human–thing, thing–human, and thing–thing relationships and interrelationships create dependence and dependency, or the enabling/reliance and constraint that are defining characteristics of contingent human experience (Hodder 2012, 2016). Latour (1993b) tries to break away from subject–object dualisms and argues for a symmetrical approach to humans and nonhumans. According to Hodder (2012: 93), Latour shows little interest in objects and object relations themselves and the nonhuman ecologies in which they interact. ANT networks of relations are problematically human-centric, and the more-than-human world seems to disappear in ANT Networks (see Watson 2007). Hodder (2012: 94) argues that there are problems with the total mixing of humans and things in networks. Sometimes in history, things might seem to be dominant (i.e., global warming), and things depend on other things. Network theories give real symmetry to humans and things. The focus on entanglement, however, sees the operational sequences and flows as caught up in each other in asymmetrical ways. According to Hodder (2014), humans become set on a particular path and become entrapped, but then start tinkering to fix the perceived failures. Thus, there is a temporal dimension to entanglements as relationships evolve. This article examines how the entanglement approach can be used to define island connectivity and insularity of Neolithic Gökçeada, and how the degree of communication effects social interactions.

The Neolithic Site of Uğurlu on the Island of Gökçeada (Imbroz)

The island of Gökçeada (Imbroz) is about 17 km from the Gelibolu (Gallipoli) Peninsula and covers an area of 289.5 sq km (fig. 1). Uğurlu at Gökçeada is the only early Neolithic settlement thus far known in the eastern Aegean Islands. Six main cultural phases, designated as I–VI (counting from top to bottom), and at least fifteen layers of occupation have been revealed so far (Erdoğu 2014, 2016, 2017a). The earliest Phase VI dates to the prepottery Neolithic period, ca. 6800–6600 cal BC. Phase V is marked by the first pottery Neolithic, ca. 6600/6500–5900 cal BC. During Phase IV, around 5900/5800 cal BC, the settlement expanded, and the cultures of island and mainland clearly diverged.

In the pre-pottery Neolithic layer (ca. 6800 cal BC), part of an oval building with a sunken floor and a chipped stone workshop area with large quantities of waste were discovered. The earliest pottery found at the site appears at around 6600 cal. BC and its number is limited. Clear archaeological features were observed in this first pottery layer, specifically an oval sunken mud-plastered basin and a hearth, ca. 50 cm in diameter, and a destroyed lime-plastered floor painted red. The first pottery of Uğurlu is fine and mineral tempered, while organic temper is almost absent. Most of them are grayish-brown in color. Only rim sherd is red slipped and



Fig. 1. Location of Uğurlu in the northeastern Aegean.

is from a globular bowl of closed form (Erdoğan 2017a). The earliest pottery in western Anatolia was also found in Barcin and Ulucak around 6600 cal BC (Gerritsen, Özbal, and Thissen 2013; see Özbal, Gerritsen this volume)

Uğurlu Phase V is divided into at least four different layers. A building with damaged mud walls on a stone foundation, so far partly excavated in the earliest layer. Anatolian Hacilar type of “coffee-bean eyed” figurine (fig.2:5) and a malachite lump lay on the floor. A single-room building of Phase V about 5 × 4 m with exterior buttress has also been excavated (fig. 3). Significant for Phase V is a 7 m-long and 1 m-high monumental entrance with a large standing stone that obstructs the doorway (fig. 4).

Layers of Phase IV have been excavated in the western part of the settlement, and they have been damaged by the Chalcolithic occupation (5500–4350 cal BC). An apsidal building with a thick reddish-colored compact floor and a partly excavated rectangular building with damaged stone walls and a large storage vessel in one corner of the building has been unearthed. A plastered pit cut the building. Twenty-eight worked bones (fig.2:11), one stone bowl (fig.2:7) and one broken stone adze were found inside the pit.

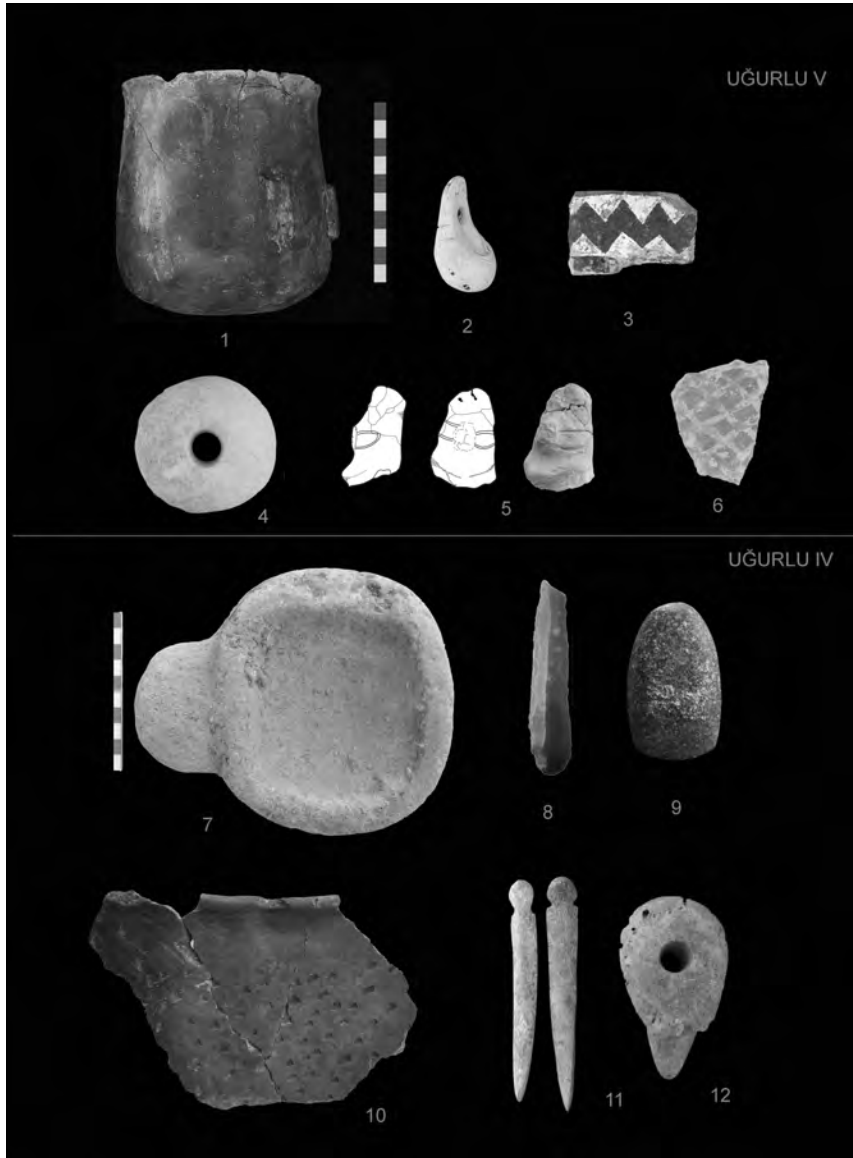


Fig. 2. Selected finds from Neolithic Phases V and IV at Uğurlu.

Domestic cereals including einkorn wheat (*Triticum monococcum*), emmer wheat (*Triticum dicoocum*), six-rowed barley (*Hordeum vulgare*), naked barley (*Hordeum vulgare var nudum*), and pea (*Pisum sativum* L.) were present throughout the sampled deposits. Einkorn wheat was the most abundant of the cultivated species. Several wild fruits such as grape (*Vitis vinifera* L.) and fig (*Ficus carica*)

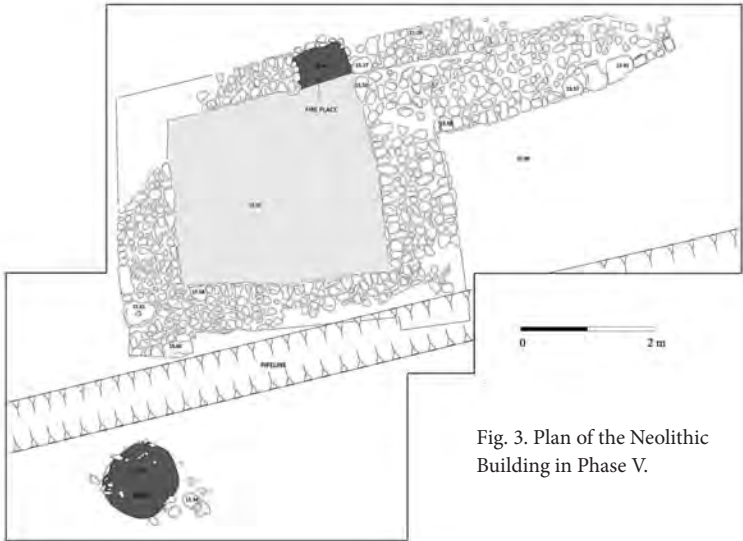


Fig. 3. Plan of the Neolithic Building in Phase V.



Fig. 4. Uğurlu. A large standing stone obstructs the doorway of the monumental entrance (ca. 6000 cal BC).

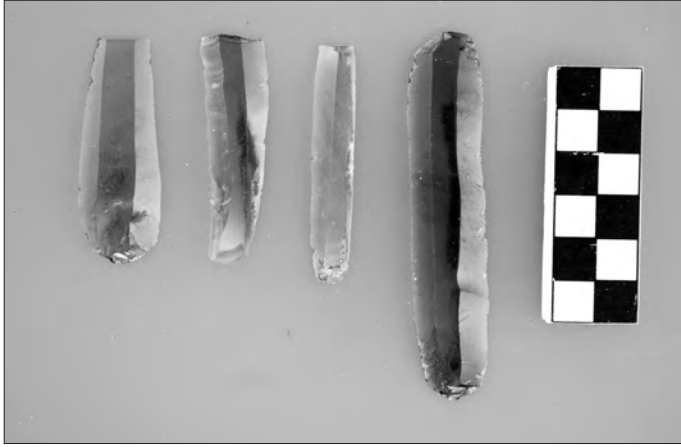


Fig. 5. Obsidian from Göllüdağ at Uğurlu.

were also gathered. The faunal data shows a three-tiered pastoral economy with a primary focus on caprines and a secondary focus on cattle. Pig exploitation was marginal (Atıcı, Pilaar Birch, and Erdoğan 2017).

The pottery from the earlier periods is lustrously burnished and thin-walled. Phase V pottery is red slipped and burnished (fig. 2:1), while red-slipped black ware is dominant in Phase IV. Decoration is rare but the most characteristic decoration is white-on-red and red-on-white painted in Phase V, and impresso and red-on-black painted in Phase IV (fig. 2:6 and 2:10).

Neolithic Gökçeada (Imbroz) is characterized by striking evidence of long-distance communications. The distribution of Melian and central Anatolian obsidian as well as Balkan honey-flint and marble suggest the intensification of long-distance exchange mechanisms, and travels must have involved seafaring for some parts of the journeys. In addition, the ground stone axes made of nephrite and jadeite from western Anatolia and the Aegean islands provide examples of local exchange. From the start of the occupation of Uğurlu, both flint and obsidian were used for making chipped stone tools. Melian obsidian was widely used at the beginning of Phase VI, but central Anatolian East Göllü Dağ and Nenezi Dağ obsidians were also available (fig. 5; Erdoğan 2014; Milić 2014). The most distinctive tool in Phase IV is also a flint macroblade (fig. 2:8), the so-called “Karanovo macroblade” of the Balkan honey-colored flint (Gurova and Bonsall 2014). The origin of this type of flint is in the Nikopol-Pleven-Shumen region of the eastern Balkan Mountains. The pressure technique was commonly used in the chipped stone industry of early Uğurlu, and it seems that the flint knappers were highly skilled.

Marble objects are the main finds in Neolithic Uğurlu (fig.2:4). No marble sources are found on the island. Western Anatolia and Aegean islands like Lesbos

and Thasos, have sources of fine white marble. Unfortunately, quarry sites are generally unknown.

The concept of the “Neolithic Package” in the neolithization of western Anatolia should be addressed in this context. I have already mentioned elsewhere (Erdoğu 2017b) that the “package” is not a clear and simple ideal entity that was initiated in the Near East and then spread to different directions as some researchers (e.g. Çilingiroğlu 2005; Özdoğan 2010, 2014 and in this volume) have suggested. New perspectives in archaeology, especially social network analysis and perhaps entanglement, questioned the concept of the Neolithic Package. Hodder (2012: 195–200) investigates the elements of the Neolithic Package by seeing these elements not as a package but as an entanglement. He explains how these elements became increasingly entangled with each other over a very long period of time. Excavations in western Anatolia show that the different parts of the “package” from 6500/6200 cal BC onward were entangled in networks that become more complex over time. Thus, it is impossible to talk about uniform package or packages but instead of a web of complex relations. Each society interacted with one another in a complex web of relations, and consequently they constructed identity and, possibly, changed their daily habits and material culture.

Sea Level Trends, Island Formation and Seafaring in the Case of Gökçeada

The island is located in the northern Aegean. Sea levels and the shoreline in the Aegean were different in prehistoric times. Starting at the time of the Last Glacial Maximum (around 21,000 years ago), sea levels once stood in a position about 120 m lower than today. The islands of Gökçeada, Bozcaada, Lemnos, and Samothrace were connected with the mainland. Sea levels were 100 m lower at the time of the Older Drays (ca. 17,000 to 16,000 years ago), and Gökçeada together with Lemnos began to form as an island around 14,000 years ago. Gökçeada and Lemnos were connected with each other with an isthmus (Perissoratis and Conispoliatis 2003). The rise of Aegean sea levels continued at a slower pace and reached approximately 18 to 12 m lower than today during the Early Neolithic period in around 8,500 years ago (Özbek and Erdoğu 2014).

During the summer months, when conditions were favorable for voyaging, trips that involved comparatively short crossings in a small boat could be made without much difficulty—both between neighboring islands and to or from the mainland. It is most likely that simple vessels, such as reed or log boats, would have been used for early seafaring. The voyager had to have a good sense of the winds and currents in order to make successful crossings from Gökçeada to Lemnos, or to the mainland. Such local knowledge was acquired by means of practical experience and handed down from one generation to the next. The island is very

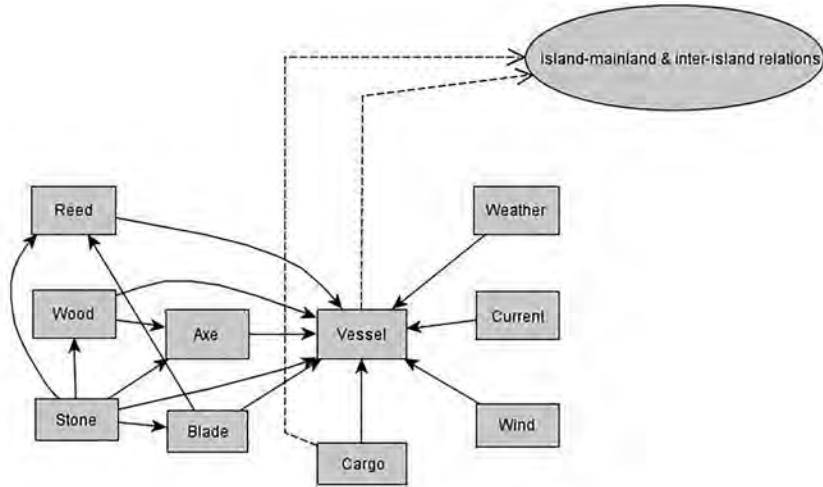


Fig. 6. Island–mainland and interisland relations associated with the unfolding entanglements.

windy. The highest wind speeds occur in winter (8.4–7.5 m/s) and the lowest in spring (6.2–5.4 m/s). Wind speeds are also higher in summer, especially in August (7 m/s), but the land masses around Çanakkale and the proximity of the

Gelibolu Peninsula to Gökçeada must have a curbing effect on the wind speed. Thus, lower mean speeds occur between Çanakkale and Gökçeada during summer. The winds are predominantly north-northeast. Wind blows from the south in May and from south-southwest in September. Winter sailing is dangerous because of very high wind speed. Seafaring to and from the island of Gökçeada would probably have been undertaken in spring and summer when the sea was calmer, land visibility was good, and weather conditions and sea currents were predictable. The current from the Gelibolu Peninsula flows northward and southward, making sailing possible in both directions. It is perhaps worth adding here that some caution is called for in taking the winds and currents obtained today and projecting them on the remote past. While scholars may have some ideas about prevailing winds at the broader level (Broodbank 2013), little is still known about the local weather systems in various parts of the Mediterranean between 12,000 and 6,000 cal BC. Some earth scientists (e.g., Martin and Yanko-Mombach 2011) have even begun to view these years as a time of “repeated ocean-atmosphere reorganizations.”

For purposes of navigation, what has always remained more or less the same in the region is its major landmarks. The dominant landmark to the west is Mount Athos, which reaches an elevation of 2,033 m. On a good day, it can be seen from Uğurlu at a distance of 116 km. In the Neolithic period, it was the landmark used for voyaging from Gökçeada and Lemnos to islands like Youra and Agios Petros

in the northern Sporades (Sampson 2008; Efstratiou 1985), and from there on to the Greek mainland. To the north of Gökçeada and Lemnos the mountain peak of Fengari (1,600 m in elevation) on the island of Samothrace was another prominent landmark. In short, without citing other examples, the northern Aegean was well supplied with good landmarks for the early voyager.

Applying Entanglement

Dependence between humans and things affects how islanders communicate, and the degree of communication affects social interactions. It seems evident that the accessibility of the islands and the web of their external communications depended upon vessels. Vessels are essential actors in the exchange of materials both produced by and active in a wide network of relations. The entanglement approach can be defined as the sum of four types of relationships between humans and things (Hodder 2012, 2016): humans depend on things (HT), things depend on other things (TT), things depend on humans (TH), and humans depend on humans (HH). Thus $\text{entanglement} = (\text{HT}) + (\text{TT}) + (\text{TH}) + (\text{HH})$. Human use of things allows humans to live, socialize, eat, think, etc. Islanders are depending on their vessels to reach people on other islands and the mainland. They need to explore the other worlds and encounter other peoples and be able to trade, socialize, or share knowledge with them (fig. 6).

Hodder (2012: 58) argues that “humans can only act, think, ‘be’ as a result of their dependence on things. But the things themselves, in their interactions with each other, play an active role in the mix.” Islands are isolated lands. Islanders can only sail in prevailing conditions. Seafaring is a skill that requires the knowledge of prevailing wind directions and sea currents as well as a reliable vessel. It also relies on navigational skills. Reaching people on other islands and the mainland by a vessel depends on weather conditions. Islanders and their vessels must wait for suitable weather conditions. These conditions do not depend on humans.

According to Hodder (2012: 85), “things depend on people when they are procured, manufactured, exchanged, used, and discarded but in particular they depend on people to maintain them if they are to remain as people want them.... Dependence of things on humans draws humans deeper into the orbit of things.” Islanders need reliable vessels to contact other people on other lands. It is most likely that simple vessels such as reed or log boats would have been used. They need solid woods or reeds, and they also need certain equipment, for example, an axe to hew wood. Thus, making a vessel connects with stone axes or flint tools and their maintenance depends on humans.

The entanglement approach suggests that human–human, human–thing, thing–human, and thing–thing relationships and interrelationships create dependence and dependency. A vessel depends on solid woods or reeds and also

depends on equipment, such as stone axes or flint tools. Sailing and crews depend on a reliable vessel, weather conditions, and winds and currents. But winds, currents, and weather do not depend on each other. Cargo depends on the vessel but does not depend directly on winds, currents, weather, and so on.

Concluding Remarks

The entanglement approach incorporates the underlying mechanism of past interactions of people and things, and it also focuses on the multidirectional and multiscale entrapments that emerge from interactions. Our study shows that in the Neolithic, island communication relied on how things depended on other things and on humans. Islanders were separated from and connected to the lands and peoples that surrounded them. Maritime interaction involved communications between distant peoples, and the vessels came to be seen as essential actors in that they connected people and things.

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Early Farmers in Northwestern Anatolia in the Seventh Millennium BC

NECMI KARUL

Abstract: Until the beginning of this century, the prehistoric periods in northwestern Anatolia were less well known than other regions of the peninsula. With the recent excavation of five settlements dating to this period, it is today a relatively well-researched part of Anatolia. Preferences on site locations, architectural tradition, and village settings display clear differences between the sites despite a common material culture. Those sites dating roughly to the second half of the seventh millennium BC are discussed in this article in order to understand dynamics of the neolithization process in the region.

Keywords: northwestern Anatolia, Early Pottery Neolithic, early farmers, Fikirtepe Culture, Aktopraklık

Research on the prehistoric societies of northwestern Anatolia has increased rapidly over the last two decades. The increase in the number of projects in the region has not only indicated earlier dates than expected but has also enriched the cultural setting (fig. 1). As a result, it has been possible to determine that the Neolithic in the region was a diachronic process and that regional differences between the settlements were remarkable. The Mesolithic background will have played an important role in these differences as much as environmental and other, cultural factors. However, due to a lack of data from the Mesolithic period, there are still questions regarding the interaction between the local communities known to have existed along the Marmara and Black Sea coasts (Gatsov and Özdoğan 1994).

The first farmers seem to have been nonlocal communities (Karul 2017; M. Özdoğan 2006). Chipped stone assemblages found at Mesolithic sites are defined as geometric microliths, microblade cores, and microlithic tools, and reflect an epi-Gravette tradition that resembles traditions in the circum-Pontic region rather than Anatolia (Gatsov 2005). Continuity in the chipped stone technology by the early settlers as a part of the general process of neolithization varies due to the idiosyncratic circumstances of the local Mesolithic communities (Karul 2017, 2011).

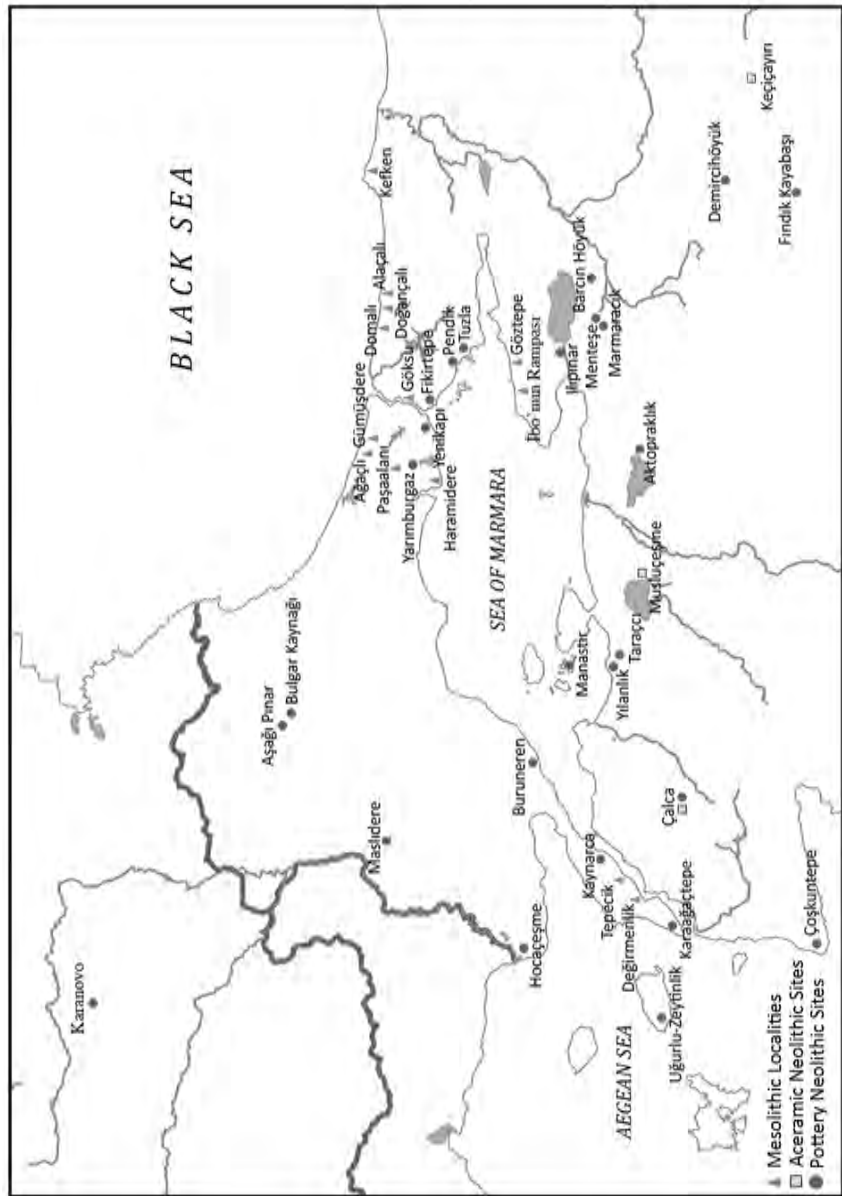


Fig. 1. Map of Mesolithic and Neolithic sites in northwestern Turkey.

Although accurate evidence and systematic excavations of the Pre-Pottery Neolithic period are nonexistent, a naviform core was recovered in Istanbul at Büyükçekmece (Aydingün 2009). In addition, the chipped stone technology known from Çalca and Musluçesme (Özdoğan and Gatsov 1998), in the vicinity of Çanakkale, are distinct from Pottery Neolithic sites in the region. Eskişehir-Keçiçayırı, another Pre-Pottery Neolithic site, is in an area that opens onto central Anatolia (Efe, Gatsov, and Nedelcheva 2012). While this material can be evaluated as evidence of the former inhabitants of the region before the early farmers, it is difficult to assign it to a specific moment in the process of neolithization in northwestern Anatolia.

From the beginning and middle of the seventh millennium BC, a number of Neolithic settlements and a settled life based on farming began to appear, not only in the northwest but in the whole of western Anatolia. Despite this being a controversial topic, it is understood that the number of settlements where pottery is consistently used suddenly increases in the region from 6500 BC onwards, and reflect a transition from an initial Neolithic phase when pottery is not, or is scarcely, used (E. Özdoğan 2015).

Contemporary dates for the appearance of the first Neolithic sites in western Anatolia make it clear that the expansion of the Neolithic into this area was a region-wide trend, even though there are clear differences between areas in western Anatolia. In order to study this trend, I offer detailed and integrated evaluation of settlements dating to the seventh millennium BC that will increase our understanding of the general characteristics of the first farmers in northwestern Anatolia and define differences and similarities between the settlements.

Geographical and Chronological Frame

The first farmers in northwestern Anatolia inhabited two different environments, the coasts and the plains. In addition, as with Aktopraklık (fig. 2), there are some settlements located in threshold areas transitioning from mountainous environments to the plains. Because of the scarcity of surveys in the region, it is controversial to make a determination based on the distribution of settlements so far known. Therefore it is necessary to question whether settlements like Aktopraklık, which was only revealed by chance on a mountain threshold, are peculiar to this region or not. While there are some similarities between settlements that are peculiar to this region, there are also some differences in settlement pattern, architecture, and use of space, especially at the beginning of the Neolithic.

Coastal settlements in the region are generally located east of the Istanbul Strait and its vicinity. Some similarities exist between these and the ones from Yenikapı along the western coast of the Strait. The settlements excavated or known from the surveys are generally found close to where small streams flow



Fig. 2. General view of Aktopraklık Area C.

into the sea. In the southeastern part of the Marmara, where the density of the Neolithic settlements increases, there is more rugged topography interspersed with small lakes, alluvial covered lakebeds, and rivers. In this area, geographical units defined as plains are generally linked to one another and include small plains or basins. It is possible to associate the density of the Neolithic settlements in the plains with a cultural relationship to central Anatolia.

The first settlements in northwestern Anatolia are dated between 6600 and 6000 BC to the Middle–Late Neolithic, the end of Early Neolithic (6600/6500 BC) in western Anatolia (E. Özdoğan 2015). Radiocarbon dates from Menteşe, Aktopraklık C and Barcın extend back to the middle of seventh millennium BC. The earliest Neolithic occupation at Barcın is dated to 6600 BC (see Özbal and Gerritsen in this volume) and Menteşe and Aktopraklık are dated to 6400–6300 BC (Roodenberg et al. 2003; Karul and Avcı 2013). Although absolute dates are not available from Fikirtepe and Pendik (M. Özdoğan 2013), the sites can be dated to the second half of the seventh millennium BC based on the material culture. The Late Neolithic–Early Chalcolithic period, which we excluded from this article, is dated between 6000 and 5500 BC and can be recognized in northwestern Anatolia by the distinct region-wide differences from western Anatolia (see Özdoğan in this volume). It is also understood that differences among settlements in coastal and transitional areas as well as plains become indistinct in this period.

Early Farmers and Settlements

Barcın Höyük

Located by James Mellaart in the 1950s under the name of Yenişehir II (Mellaart 1955), Barcın Höyük is a two-hill mound on the Yenişehir Plain. The east mound covers an area of 90 m and extends around 4.5 m above the plain while the other mound covers an area of 50 m and measures around 2.5 m (Gerritsen, Özbal, and Thissen 2013a: 94). Continuing research at the site began in 2005 under the direction of F. Gerritsen. The settlement has six layers and the Neolithic period is represented by Layer IV which has five phases (e–a) and is dated between 6600–5900 cal BC (p. 97).

The earliest architectural remains in Barcın, in Layer VIe, consist of rectangular wattle and daub houses in adjacent order. The subsequent settlement in Layer VIId is the most well-preserved and architectural techniques with the layout of the settlement continue from VIe. Single-room structures in adjacent order are open to the courtyards in the south (p. 96). A structure from Layer VIId was covered with wooden planks and divided by different floorings, indicating it was divided into different spaces. Even a brief outline of these architectural remains show that these units define most of the space usage at the site and help to define the location of activities in both interior areas and exterior areas like courtyards. Furthermore, each unit was built in consideration of the other units. This makes it possible to deduce a real village pattern at the settlement.

There was also an intramural burial tradition at Barcın. Adults were buried outside and children and infants were buried inside the structures (Alparslan-Roodenberg, Gerritsen, and Özbal 2013).

The pottery in Layer VIe, the earliest layer, is very scarce, marking the existence of a phase when the use of pottery is not yet very common. In this phase, mineral-tempered wares predominates with dark grayish-brown to yellowish-brown color on the surface. Vessels generally have thick walls and the majority of the vessels consist of holemouth pots and deep bowls with knob handles in the assemblage. Among the oldest examples are polypod vessels, which seem to be used also in later layers (Gerritsen, Özbal, and Thissen 2013a: 98; Gerritsen, Özbal, and Thissen 2013b). While mineral-tempered pottery is still used, calcite-tempered pottery starts to appear in later layers. Surfaces are light gray, cream, and reddish pale brown in color. Forms are varied: cups, bowls and holemouth pots, and slightly “S”-shaped pots with two lugs are characteristic of these layers. Representing the later stages of Neolithic period in the settlement, in Layer VIC, there are mineral tempered vessels with thinner walls that appear in dark brown and shades of black. S-shaped pots predominate and pierced lugs and lug handles (Gerritsen, Özbal, and Thissen 2013a: 98). Characteristic features of the pottery from the Barcın Neolithic not only illustrate the process of development in the

earliest pottery in the region but also bear similarity to some characteristics of the “Fikirtepe Culture,” which will be mentioned in detail below.

The flint and obsidian at Barcın is mostly based on blades and bladelets made from single platform conical cores and bullet cores. Among the tools, flat semi-circular or circular end scrapers are common. In addition, “thick” end scrapers are typical. Another group of tools is micro-end scrapers, and drills on blades, which are common elements at other contemporary settlements (Gatsov, Kay, and Nedelcheva 2012: 131, 135). Alongside perforators, spoons, and spatulas, pendants, hooks, and fastening pieces comprise the bone tools. Clay finds include a few animal and female figurines (Gerritsen, Özbal, and Thissen 2013a: 99).

Menteşe Höyük

Another settlement in the plains is *Menteşe* (see Roodenberg in this volume), located in the eastern part of the Marmara. Situated on the *Yenişehir Plain* to the south of *İznik Lake*, the settlement covers an area of 150 m (Roodenberg and Alpaslan-Roodenberg 2007: 397). Like Barcın, this mound was discovered during the surveys of the 1950s by J. Mellaart. Excavations were conducted in 1995, and became part of a larger project directed by J. Roodenberg, in the name of the Netherlands Institute in Istanbul, until 2000 (Roodenberg 1999: 22).

Divided into three subphases as upper, middle, and lower, Phase 3 is dated between 6400 and 6200 BC (Roodenberg et al. 2003: 37). There are three structures in the upper layer and these one-roomed structures are 5 × 5 m, quadrangle in plan. *Pisé* or mud slabs are used on the walls built with wattle and daub technique (Roodenberg et al. 2003: 21). Outside of the structures, which are each built near each another, is a courtyard (Roodenberg et al. 2003: fig. 3; Roodenberg and Alpaslan-Roodenberg 2013: 75). Within the courtyards and the structures there are floors covered with yellow clay that is meticulously prepared. Ten adult and child graves were found in and around the buildings in Phase 3. Bone tools, complete vessels, and ornaments were left as grave goods near the burials, which were interred in a fixed position. The existence of the scapula, ribs, and horns of bovine animals like cattle draw attention to the graves (Roodenberg et al. 2003: 22). Despite being excavated in a limited area, the traces of a village pattern similar to Barcın is discernible.

In the Neolithic layers where mineral-tempered pottery predominates, pots are generally gray-beige in color and have a polished surface. But there are also some vessels with dark gray and black surfaces. Vessels forms are mostly spherical, narrow, or holemouth, S-shaped profiles are also common (Roodenberg et al. 2003: 26; figs. 12–14). Pierced vertical or horizontal lugs, in addition to pierced lunate or flat handles and thick vertical handles are also typical for the site (Roodenberg, 2003: fig. 16). Thinly incised geometric motifs filled with diagonal hatches or occasionally deeply incised linear motifs are used as a decorative

element. These incised motifs are sometimes filled with white paste (Roodenberg et al. 2003: 27). Among the Neolithic pottery there are a few examples of applique decoration and a few of red and white paint. Rectangular, incision-decorated polypod vessels, are found in all phases.

Other finds come generally from the graves at Menteşe. Beads, bone spoons, and tools, pottery discs, and a clay spoon have been found (Roodenberg et al. 2003: 34). In the chipped stone assemblage, flint is the predominant material. Blade production from single platform prismatic cores is the main features of the technology (Gatsov 2003: 154).

Aktopraklık C

Although it is not a coastal settlement, Aktopraklık C has many similarities to Fikirtepe and Pendik. Aktopraklık is located to the south of Ulubat Lake, on one of the natural terraces descending to the lake. Connected to the Marmara Sea via the Çapraz Stream, Ulubat Lake is the most important element shaping the natural environment in which the settlement is located. Situated 4.5 km distant from Ulubat Lake today, in prehistoric times the settlement was surrounded by streams that flowed into the lake and a dense oak forest. Comprised of three settlement units close to one another, the earliest one, which is on the northernmost part of the mound, dates back to the second half of the seventh millennium BC and is named Aktopraklık C (fig. 3).

Archaeological investigations began in 2004 under the auspices of the Department of Prehistory at Istanbul University. The archaeological deposit in Area C represents a two-phased settlement the preserved 30×40 m sector of which had a maximum height of 1.5 m. It seems that the area was used as a graveyard in the Early Chalcolithic. Two human bones give us a radiocarbon date of 6322±52 cal BC from the Neolithic settlement and 5692±27 cal BC from the Chalcolithic graveyard and provide a chronological framework for the sites (Karul and Avcı 2011).

Due to the destruction of the Early Chalcolithic graveyard, the remains of the Neolithic settlement were heavily damaged. Only lines from a few stones could be defined in the architectural subphase. Traces of wattle and daub, circular or oval-shaped, semi-sunken huts were identified in the upper subphase (fig. 4). The diameter of the huts varies between 3 and 6 m and in some of them a set of stones was found along the walls. Ovens were situated adjacent to the wall in the three structures and around the huts areas multiuse areas were apparent. Burials were found under the house floors. The interred individuals were in the hocker position and vessels and bone tools were left close to the heads and feet as grave goods.

In Aktopraklık C, the pottery vessels are mostly different shades of brown and red (fig. 5). Cream and beige wares, which are common in the early phases of Basal Menteşe, Barcın, Pendik, and Fikirtepe are also found in Aktopraklık



Fig 3. General plan of Aktopraklık Area C.

C (Roodenberg et al. 2003: 39; M. Özdoğan 1979: 208–9). Thin-walled, dark-colored vessels and red slip make up a distinctive group in the pottery, which is also known from Fikirtepe (Avcı 2010; Karul and Avcı 2011). S-profiled bowls are the most frequent forms in red wares and narrow-mouthed pots are common among the coarse wares (fig. 6). Big horizontal lugs, which are known from the archaic Fikirtepe phase (Özbasaran 1989: 14; M.Özdoğan 1979) are also discern-



Fig. 4. A section of the semisubterranean hut and a Chalcolithic grave in front of it, Aktopraklık C.



Fig. 5. Neolithic vessels. (a) Aktopraklık C; (b) Ilıpınar (Roodenberg 2003: 21); (c) Fikirtepe.

able. Flat-sided simple pots, tubular pierced lugs, and lunate-shaped pierced lugs also commonly occur in the pottery assemblage. As the other sites in the region, polypod vessels are also found in Area C (fig. 7).

Among the small finds, beads made from several different stones and bone tools like scrapers, as well as spatulas and spoons are common. Moreover, fragments of marble vessels, axes, chisels, and grinding stones are found. Chipped

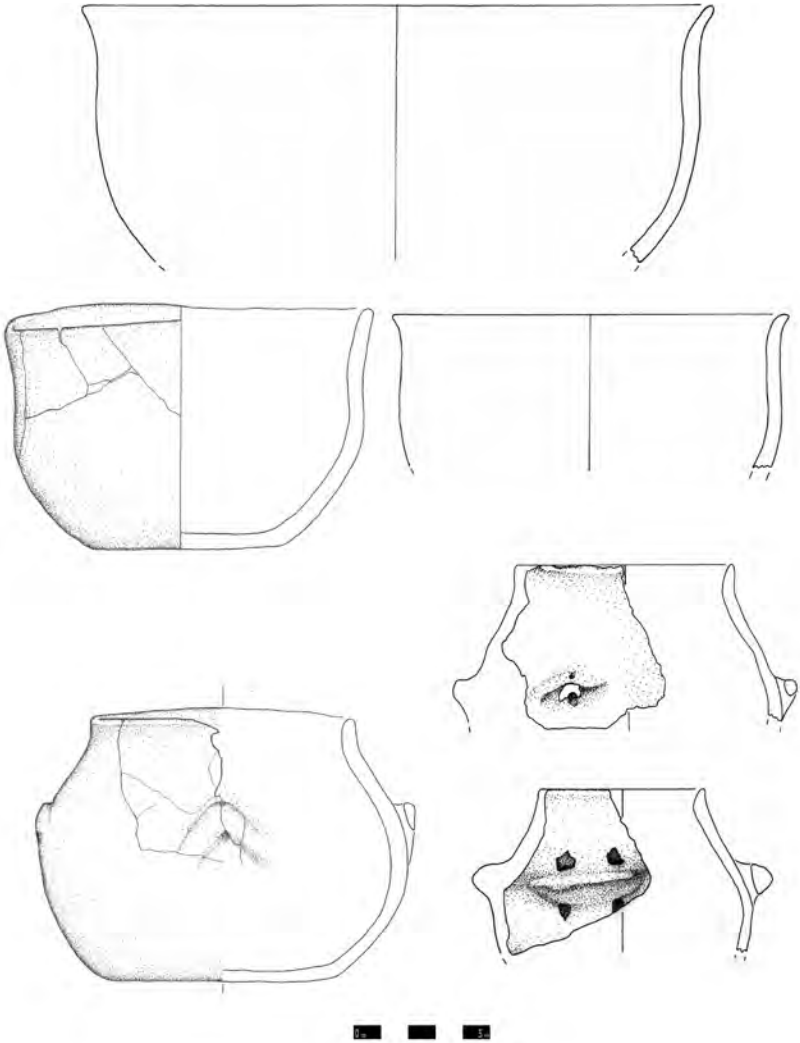


Fig. 6. S-shaped and closed vessel forms, Aktopraklık C.

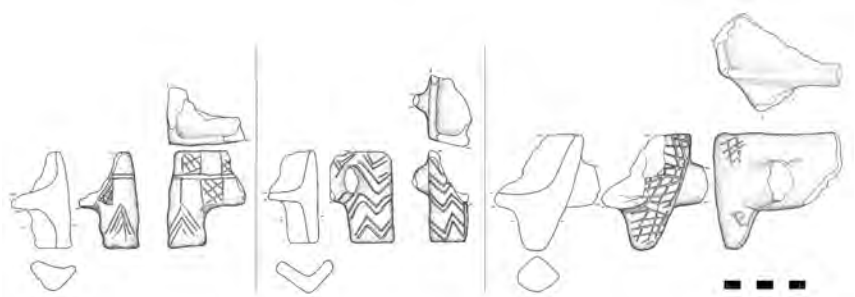


Fig. 7. Polypod vessels from Aktopraklık C.

stone technology is mostly based on flint (fig. 8). The obsidian from central Anatolia was brought as a core and processed at the settlement (Balçı 2011). Other common tools are blades obtained from prismatic and bullet cores using the pressure technique, and flakes from flake cores with the direct percussion technique. Obsidian bladelet/blade knappings were from prismatic cores using the pressure technique (Balçı 2011: 4). There are also microlithic tools, albeit in small quantities (fig. 9).

Pendik

Giving their name to the Neolithic communities in the region, Fikirtepe and Pendik were first mentioned by J. Miliopulos who was responsible for the construction of the Baghdad Railway at the beginning of the twentieth century. The material from Pendik was published first by T. J. Arne and then by M. O. Janse (M. Özdoğan 1983). After a sounding was made by Ş. A. Kansu in 1961, Pendik was excavated by E. Uzunoğlu in 1982 (Harmankaya 1982; M. Özdoğan 1983); by A. Pasinli in 1992 (Pasinli 1994); and by Z. Kızıltan between 2012 and 2013 in the name of Istanbul Archaeology Museum (Kızıltan 2013). The site covers an area 200×300 m in size and 2 m in depth. The excavation was conducted on an area of 150 m^2 in 1981, 550 m^2 in 1992, and 250 m between 2012 and 2013.

Situated right under the remains from modern and Byzantine deposits, the Neolithic deposit lies on the bedrock and contains different phases. Since the excavations took place in different areas on the settlement and new excavations have not yet been published, it is difficult to establish a stratigraphic sequence. But here, layers in the Neolithic period chronologically match Fikirtepe (M. Özdoğan 2103: 175). In the lower layers, there are circular wattle and daub huts with semi-sunken floors dug into the bedrock. The diameter of the huts varies between 3 and 6 m and floors reach a depth of up to 50 cm. Some floors are supported with big flat stones or pebbles. The excavation in 2013 revealed that the structures were not only comprised of round-plan huts, but there was also a quadrilateral structure, which was divided into small spaces with installations, such as platforms, bins, and silos. This type of structure was not known from the coastal sites but is a common feature of the inland sites: the rectangular building in Pendik shows that characteristics of Anatolian Neolithic architecture are also present in coastal sites.

The pottery assemblage in Pendik contains well-polished vessels that are different shades of brown, black, and red (Özbaşaran 1989: 15). Pottery mainly consists of small and medium-sized S-shaped spherical bowls and hole-mouth jars. Heavy lugs and some tubular lugs are seen on the pots. Decoration appears in the form of thin lines, dots, and pricked dots. As with other settlements in the region, polypod vessels are also found at Pendik.

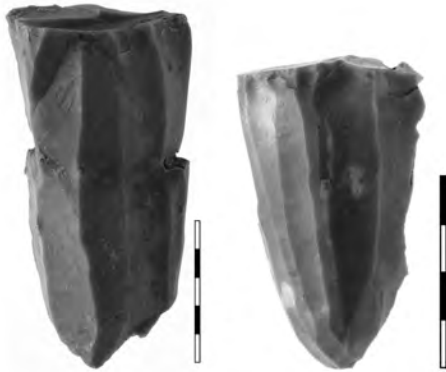


Fig. 8. Prismatic flint cores from Neolithic layers of Aktopraklık C (from Balcı 2011: fig. 2).

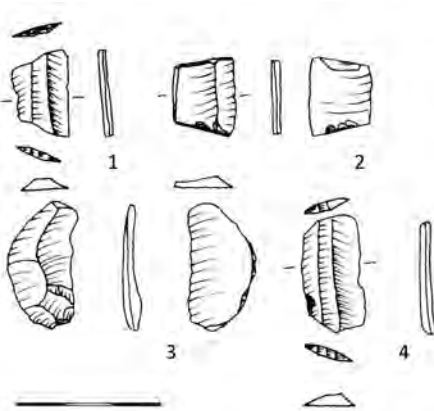


Fig. 9. Microliths from Neolithic layers of Aktopraklık C (from Balcı 2011: fig. 4).

Although they are not published in detail, among the small finds are clay human figurines, pintaderas, fragments of animal figurines, sling missiles, and loom weights. Bone tools consist of polishing tools, spatulas, awls, a fishhook and spoons (Pasinli et al. 1994: 152). Besides the stone and shell beads, some baked-clay beads were also found (Baran-Çelik and Kiraz 2007). The chipped stone technology was mainly based on flint with a few examples of obsidian. The most frequent tool types are microblades, scrapers, and discoid tools with a small number of geometric microliths. Prismatic cores and blade production are also seen in Pendik.

Fikirtepe

Situated in the Fikirtepe district of Istanbul, the settlement of Fikirtepe is located on a terrace descending to the Kurbağalıdere Stream, which flows into the sea from the Moda Cove. The site discovered in 1907 as Pendik, and excavations were conducted by K. Bittel and H. Çambel between 1952 and 1954. Covering an area of 200×380 m, with a fill 1.5 m thick, the settlement was excavated in an area of 480 m² (M. Özdoğan 2013: 173). The thirteen freestanding wattle and daub huts revealed at Fikirtepe were circular or oval in shape and had slightly semi-sunken floors. The structures were near each other but dispersed around the area. It is possible to say that the settlement pattern is similar to Pendik and Aktopraklık C.

Since the excavations are very old and radiocarbon dates were not taken, it is difficult to specify the stratigraphic position of the settlement. The material culture, however, shows that Fikirtepe is dated to the second half of the seventh

Since the excavations are very old and radiocarbon dates were not taken, it is difficult to specify the stratigraphic position of the settlement. The material culture, however, shows that Fikirtepe is dated to the second half of the seventh

millennium BC. According to an analysis of the pottery assemblage, the site has two phases; “archaic Fikirtepe” and “classical Fikirtepe” (M. Özdoğan 2013). The pottery of the archaic phase is usually black and brown and consists of holemouth jars sometimes with large lugs. While decoration is quite rare, there are examples of simple incised lines. The main wares and forms of the archaic Fikirtepe phase are maintained during the classical Fikirtepe phase with few changes. Small or medium-sized spherical or S-shaped jars, crescent lugs, and sometimes pierced knob handles are very peculiar to this phase. Despite being low in quantity, small horizontal handles or vertical tubular lugs can be found. Their surfaces vary from cream to pale red, to reddish pale brown to brown or gray, and incised decoration increases (E. Özdoğan 2015: 40–41). Polypod vessels are encountered also in this type site of the Fikirtepe Culture (Schwarzberg 2005).

Small finds from Fikirtepe do not show a great variety and the most characteristic findings are bone tools. Among these are bone spoons and spoon fragments, which stand out for their quality (M. Özdoğan 1979: 164, 206). Moreover, two bone harpoons were uncovered. Both the quality and quantity of the other types of findings are low, including clay sling missiles and coarsely formed grinding stone tools (M. Özdoğan 1979: 201). Compared to the other stone tools, the chipped stone industry is mainly based on flint. There are both blade and flake industries, and microlith tools, although these are small in number (p. 181).

Regional Perspectives on the Beginning of the Neolithic in Northwest Anatolia

The most characteristic feature of the Neolithic in northwestern Anatolia is the difference between the villages in the early phases (second half of the seventh millennium BC) of the period despite the common elements observed in the area. The geographic distribution of the sites, as well as their variety, mirrors the distribution of Mesolithic sites. While there is an economy based on total farming and an Anatolian type of village pattern on the plains, there are settlements along the coast where traces of the Mesolithic communities can be seen. They have a simple settlement pattern consisting of round huts and a mixed economy of farming with fishing, and mollusc gathering. This picture is important in showing the effect of local communities on the neolithization process. However, in addition to the detailed research on Mesolithic localities and comparison with early Neolithic settlements, a systematic study is required where human skeletons will be compared in depth through morphological and genetic research in order to prove this assumption.

The oldest data regarding the Neolithic period in the region comes from Layer VIe in Barcın dating back to 6600 BC. This layer is distinct from later layers and other settlements not only by its slightly earlier dates but also due to the

scarce quantity of coarse pottery. Called the “Initial Neolithic” in general terms for the whole of western Anatolia, this phase refers to a process of time when pottery was extremely scarce in quantity or nonexistent, and it parallels developments both in the Aegean and in the Lakes District in addition to northwestern Anatolia (E. Özdoğan 2015: 36). Furthermore, the number of settlements in northwestern Anatolia increases in the later phase, which is dated between 6500 and 6200 BC. This sequence of dates refers to the archaic Fikirtepe period and matches the period that was first identified at Fikirtepe in the 1970s and called the “Fikirtepe Culture” by M. Özdoğan (1979, 2013). The period between 6200 and 6000 BC refers to the classical Fikirtepe in northwestern Anatolia when red-slipped wares increased in the Aegean Region and paint decoration increased in the Lakes District. Therefore the phenomenon differs from the other two regions. In northwestern Anatolia, there is a slight and gradual change in the pottery with the increase of incised decoration while red-slipped wares were still present. On the other hand, impresso pottery and a small amount of paint decoration appear in northwestern Anatolia right after 6000 BC, as is observed at Aktopraklık B (Karul and Avcı 2013).

Among the settlements dating to the second half of the seventh millennium BC, there are remarkable differences in terms of site locations, settlement plans, and architectural traditions. The quadrangular structures revealed at Barcın not only in this respect but also in accordance with architectural tradition represent fully equipped Neolithic houses with the customary platforms, ovens, and prepared floors covered with wooden planks. The exteriors have well defined open spaces/courtyards placed in front of the buildings for daily activities. The houses, therefore, are part of a mutually designed and agreed upon village pattern. As known from Aktopraklık B and Ilpınar (Karul and Avcı 2013; Roodenberg and Alpaslan-Roodenberg 2013), this type of settlement pattern—adjacent buildings with the well organized courtyards in front—is a characteristic feature of northwestern Anatolia in the first half of the sixth millennium BC, and the existence of this pattern at early Neolithic sites is also remarkable. The structures in Fikirtepe, Pendik, and Aktopraklık C can be defined as huts rather than houses: they are far from being houses not only in terms of their construction technique and plans, but also in terms of their usage of interior space and the arrangement of the structures. The distribution of the structures indicates that they developed individually rather than as part of an organized village pattern.

In addition to the site location and architecture, there are also differences with regard to length of inhabitation and mound formation. In the plains as in other parts of Anatolia, sites developed mound formations due to use of the same location for a long period of time. The village pattern in the plain settlements may have given rise to the kind of fills recognized in those places. But the coastal settlements are flat with only few layers.

The distribution of archaeozoological and archaeobotanical data in publications is uneven, making it difficult to assess the subsistence economy. It is clear that farming-based agriculture and animal husbandry were adopted region-wide. Furthermore, it is apparent that cattle, sheep, and goat were almost the same in number and the number of sheep and goats rose in the later phases of Aktopraklık, Menteşe, and Fikirtepe. But the size of the cattle at the sites of Fikirtepe and Aktopraklık make determining whether the cattle were domesticated or only beginning the domestication process problematic (Boessneck and von den Driesch 1979: 10), therefore the ratio of hunting to domestication is not yet determined for the coastal and mountain threshold settlements. Current data show that various species of fish were consumed and open-sea fishing was a significant occupation at Fikirtepe and Pendik, along with mollusc gathering (Boessneck and von den Driesch 1979). There seems to be a high utilization of the natural environment in those settlements.

Despite these differences, there is a mutual tradition of pottery in all settlements. The pottery consists of small and medium-sized S-profiled bowls and holemouth jars. Crescent lugs, knob handles, and vertical tubular lugs are common. Another feature of the pottery from this period is that it has cream, pale red, reddish brown, brown, or gray surfaces. These are not the only similarities among the settlements. For example, intramural and subfloor burial customs, grave goods, a productive, high-quality bone industry, polypod vessels, and the chipped stone industry are analogous and indicate a mutual, region-wide, shared culture.

Conclusion

Despite its scarcity, archaeological research conducted in western Anatolia has revealed remarkable results and led to notable insights that have encouraged new questions in the field. The excavations conducted in the Aegean have made it possible to understand a region previously unknown, owing to the alluvial fill on the plains. Research in the Aegean district has not only revealed similarities between the Anatolia and Greece, it has also clearly shown the interaction between the regions, which were thought to be separate from one another on a global scale. The research conducted in northwestern Anatolia has indicated that settlements located mainly in and around the Istanbul Strait are a part of a broad trend rather than being in a marginal zone in terms of their architectural traditions and material culture. Expanding both the spatial and temporal scales, these studies clearly demonstrate contact with central Anatolia. Thus, it has been possible to form a successive chronological sequence in northwestern Anatolia, especially for Barcın, Aktopraklık, and Ilıpınar, reflecting the period between 6600–5500 BC, with well-stratified layers.

However, in western Anatolia, there are some broad gaps between the Lakes District, the Aegean, and northwestern Anatolia. Although cultural connections between central and northwestern Anatolia had been seen as indicative of the neolithization of the region, interaction between the regions in western Anatolia must have played crucial role.

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Barcın Höyük in Interregional Perspective: An Initial Assessment

RANA ÖZBAL AND FOKKE GERRITSEN

Abstract: Using Barcın Höyük (Bursa province, Turkey), a Late Neolithic settlement that spans six centuries from 6600–6000 BC, as the main case-study, this chapter addresses questions of the northwestern spread of Neolithic communities from the mid-seventh millennium onwards. Presented here is the idea that the inhabitants that settled Barcın Höyük in the earliest levels of habitation were migrant pioneers, although it is too early to be certain about their point of origin. We compare the multifarious lines of data regarding architectural features, faunal data, and pottery styles known from Barcın Höyük to assess the similarities and differences with other published sites. However, rather than providing clarity on these issues, this first assessment mainly aims to draw attention to some parallel developments. Overall, this initial analysis does suggest that within a few centuries of their arrival, the inhabitants of Barcın Höyük participated in multiple spheres of interaction and exchange of knowledge, practices, and ideas.

Keywords: Barcın, Late Neolithic, northwestern Turkey, neolithization, Fikirtepe Culture

Our aim is to assess the extent and character of connections between central and southwestern Anatolia and the Marmara Region using new data from the Barcın Höyük excavations as a reference. Located in the province of Bursa, the site of Barcın Höyük spans a period of six centuries from 6600 to 6000 cal BC, based on over forty radiocarbon dates (Gerritsen, Özbal, and Thissen 2013b, 2013a). Excavations at Barcın Höyük contribute to a growing corpus of knowledge on the beginnings of village life and neolithization processes in northwestern Turkey (see articles in Özdoğan, Başgelen, and Kuniholm 2013). The results require us to address questions about the relative significance of the influx of developed elements of a Neolithic Package on the one hand and local trajectories and innovations on the other. Rather than providing clarity on these issues, this first assessment mainly aims to bring to attention some of the types of correspondences that could be part of such a study.

It is important to observe that the settlements in the eastern Marmara Region were following different trajectories than those in Turkish Thrace in this

transition to settled life in the seventh and early sixth millennia BC (fig. 1). Sites like Uğurlu, Hoca Çeşme, and Aşağı Pınar in Turkish Thrace (Erdoğu 2013; M. Özdoğan 2013, 2014) show cultural affinities with the sites along the Aegean coast of Turkey and the Balkans. The eastern sites—asccribed to the “Fikirtepe Culture” after the type site of the region—appear to have had a greater influx along an eastern, inland route. Here we primarily consider the correspondences between the Fikirtepe culture and regions to the east and south such as the central Anatolian Plateau and the Lakes District.

Current Models Regarding the Fikirtepe Culture

Chiefly building on observations regarding the subsistence economy and architecture, the Fikirtepe Culture of the eastern Marmara Region has been suggested to incorporate a set of juxtaposed characteristics, including what has been interpreted as two different types of settlements representing two groups of people combined under the larger Fikirtepe Culture umbrella (Karul 2009; M. Özdoğan 2014 and this volume). The prevailing idea is that some of the sites, especially those along the coast with evidence for semisubterranean round architecture as well as intensive exploitation of aquatic resources incorporate elements of indigenous forager communities, presumably distant descendants of the Mesolithic Ağaçlı groups (Karul and Avcı 2011; M. Özdoğan 1999). This group includes coastal sites like Fikirtepe, Yenikapı, and Pendik (Kızıltan 2013; Kızıltan and Polat 2013; M. Özdoğan 2013), as well as the site of Aktopraklık C, located in the foothills overlooking Lake Ulubat (Karul and Avcı 2011, 2013; Karul this volume). On the other hand, sites like Ilıpınar, Barcın, and Menteşe, located in inland valleys of the eastern Marmara Region, with clear evidence for rectangular architecture and high percentages of domesticated animal stock, suggest a dominant component of immigrant farmers (Gerritsen, Özbal, and Thissen 2013a: 105–6; M. Özdoğan 2014: 41; Roodenberg and Alpaslan Roodenberg 2013: 87).

Although the above model dominates the current literature (E. Özdoğan 2015; M. Özdoğan 2014), there is growing recognition that the new data draw a less straightforward picture. Recent excavations show that sites displaying rounded architecture also have rectilinear structures (Pendik: M. Özdoğan 2013) and conversely, sites with rectilinear architecture have evidence for what may be semisubterranean structures (Barcın: Özbal and Gerritsen 2015). Moreover, the faunal data do not unambiguously support the above-mentioned model of a merger of foragers and agriculturalists (Çakırlar 2013). Buitenhuis (1995) demonstrates, for example, that though it indisputably exhibits rectangular architecture, Ilıpınar level X yielded as much evidence for hunted animals and aquatic resources as sites like Fikirtepe, thus challenging the proposed scenarios (see also Çakırlar 2013: 66). Çakırlar (2013: 66) likewise, using the Early Bronze Age

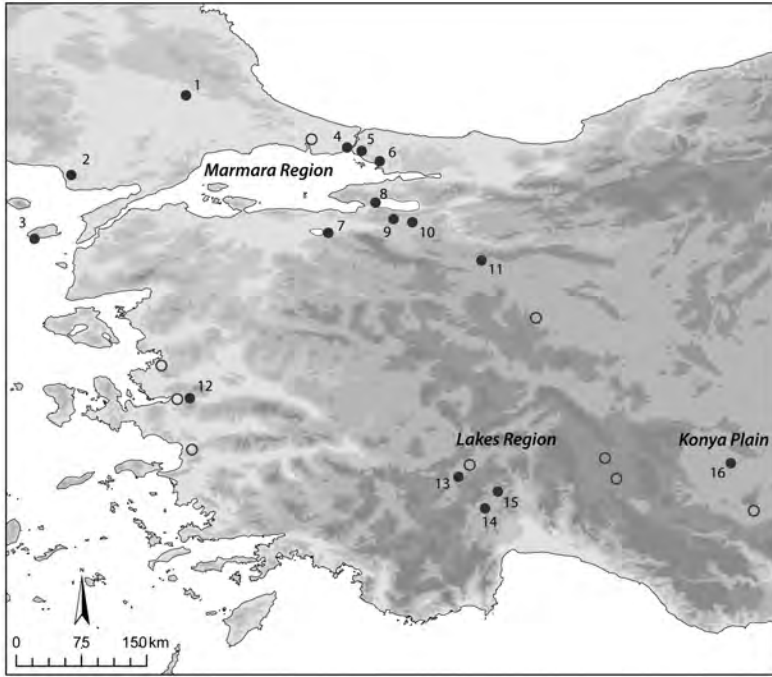


Fig. 1. Map of Ceramic Neolithic sites mentioned in text: (1) Aşağı Pınar, (2) Hoca Çeşme, (3) Uğurlu, (4) Yenikapı, (5) Fikirtepe, (6) Pendik, (7) Aktopraklık, (8) Ilıpınar, (9) Menteşe, (10) Barcın, (11) Demircihöyük, (12) Ulucak, (13) Hacılar, (14) Bademağacı, (15) Höyücek, (16) Çatalhöyük.

archaeozoological data from Yenibademli Höyük, has demonstrated little difference between Neolithic and Early Bronze Age subsistence strategies for the Marmara Region. Moreover, isotopic evidence from human skeletons at Aktopraklık seems to suggest an under-utilization of aquatic resources in both the Neolithic and Chalcolithic periods (Budd et al. 2013; Lillie et al. 2012). Together these data suggest a need for a more nuanced picture for the Neolithic of the eastern Marmara Region in the seventh millennium.

Regardless of the ambiguity present, shared elements do indicate cultural unity among the eastern Marmara sites. This includes a distinctive lithic tool kit comprised of bullet core technologies that seems to show continuity between the Mesolithic and the Neolithic in the eastern Marmara Region (Gatsov 2009: 125). Fikirtepe ceramic traditions also show a high degree of overlap between coastal and inland sites, certainly regarding the development of vessel shapes, handle types, and surface finish. Another characteristic that defines the Fikirtepe Culture is the heavy reliance on timber frames in building construction. The lack of stamps or pintaderas and the relative rarity of clay figurines are also among the listed attributes that characterize the region and period (M. Özdoğan 2014).

Combined, the above factors render the Fikirtepe Culture distinct from other regions. Yet, researchers mainly focused on ceramic styles have remarked on the similarities that the material assemblage appears to share with the Konya Plain, specifically Çatalhöyük (Brami and Heyd 2011; Özdöl 2012: 92) as well as the Lakes District sites of the Burdur area (M. Özdoğan 1997, 2014). Based on the fact that Fikirtepe wares are typically dark colored and burnished, Brami and Heyd have, for example, stated that the pottery of the Marmara Region “strongly resembles the dark burnished wares of central Anatolia, suggesting a transfer of technology from this region” (2011: 178, also see Özdöl 2012: 92; Thissen 2000: 122–23 and Efe 1989/1990). Eylem Özdoğan, in her most recent assessment of the neolithization of northwestern Turkey, however, recognizes that the issue may be more complex, stating that “it is possible to suggest that Neolithic societies using pottery in Northwest Anatolia existed while straw tempered coarse pottery was still used in Central Anatolia” (2015: 37). As will be presented in more detail below, Barcın Höyük now indeed provides a view on the development of ceramic production traditions in the eastern Marmara Region that predate the appearance of dark and burnished wares.

Neolithic Barcın Höyük

The Neolithic occupation at Barcın Höyük, known as Level VI, covers over 4 m in depth, and has been divided into different subphases from VIa to VIe (fig. 2). Ceramics were rare in Phase VIe and completely absent in the deepest VIe deposits directly overlying virgin soil. The architecture, which remains rectangular in all phases, was built using large wooden freestanding posts in this earliest phase (fig. 3). Pottery becomes abundant by Phase VIId1, dating to around 6500 cal BC when building posts not only become smaller but are placed much closer together in foundation ditches. By Phase VIb, dating to around 6200 cal BC, ceramics resembling those from the “archaic” assemblages of Fikirtepe and Pendik in terms of ware, shape, and surface treatment appear. Although there is some uncertainty about the three-fold (archaic, classical, developed) division of the Fikirtepe ceramic tradition, given the sparsity of stratigraphic data (Düring 2011: 182; Schoop 2005: 215), one could postulate that the Barcın VIb and VIba assemblages resemble “archaic” Fikirtepe type ceramics.

Subsistence

From the beginning of occupation, the inhabitants of Barcın Höyük were almost completely reliant in terms of subsistence on domesticated stock. Zooarchaeological research has shown that domesticated cattle, sheep, and some goat dominated the assemblage even in the earliest levels, and that domesticated pigs were either rare or absent (Galik 2013; Würtenberger 2012). This package of species

Fig. 2. Chronological table showing a breakdown of the subphases of Barcin's Neolithic Level VI.

Barcin Phase	Cal BC range	No. of C14 dates
Vla	6100/6000 - 6000/5900	1
Vlb	6200 - 6100/6000	9
Vlc	6300 - 6200	9
Vld1, Vld2, Vld3	6500 - 6300	14
Vle	6600 - 6500	10



Fig. 3. Photograph taken from west showing the location of the rectangular structures created by the large singular free-standing posts used in Phase VIe. Also showing are wall remains and foundation ditches of the Vld1 structures such as Structure 2b in the middle foreground.

includes domesticated cattle, which also begins to appear in the Konya Plain by the middle of the seventh millennium BC (Arbuckle et al. 2014). The lack of pigs suggests a divergence from the Lakes District where this species appears as a dominant element of the subsistence economy in the seventh millennium BC

(De Cupere, Duru, and Umurtak 2008: 372–75). Wild taxa including boar, hare, deer, birds, fish, and molluscs were present at Barcın only in very small quantities (Galick 2013; Würtenberger 2012).

Similarly, the cereals and pulses (lentils and peas) are of domesticated variants, although we do find that wild resources like hazelnuts were also exploited (Cappers and Balcı 2015). All of these data suggest the arrival in the region of groups with the knowledge of farming and herding, not to mention an influx of the domesticated species themselves. Lipid residue studies have been able to show that the inhabitants were also relying on milk products from the earliest levels onwards (H. Özbal et al. 2012; Thissen et al. 2010). The near total reliance on sheep/goat and cattle herds and cultivated crops may be related to the fact that the incoming farming groups may initially have lacked the knowledge and skills to exploit the wild resources of the newly colonized landscape of the Yenişehir Valley.

One assumes that a great range of wild foods would have been available in the Yenişehir Valley because geoarchaeological research conducted in the vicinity of Barcın has determined that the settlement was located on a small natural elevation in a marshy landscape or possibly near a retreating lake shore (Groenhuijzen et al. 2015), not unlike sites in central Anatolia (Roberts and Rosen 2009; Bogaard et al. 2014).

Architecture and Burials

Architecture provides an interesting medium to compare northwestern Anatolia with other potential source regions both in terms of layout and raw materials. Perhaps environmentally predicated, the timber and mud architecture at Barcın differs from the typical mud-brick houses known from the Konya Plain and the Lakes District. There are indications that timber was a constructional element of houses in the earlier levels of sites like Çatalhöyük (Mellaart 1963a: 52, 60, also see Düring 2006: 61, 190; Rosenstock 2014: 233–36), Hacılar (Mellaart 1970: 16), Höyücek (Duru 2008: 38–40) and Bademağacı (p. 30). At Barcın, however, timber constructions take on a whole new form; we begin to see a dependence on wood as the main structural element in buildings.

The site has several distinct phases of architecture but there appears to be general continuity in building location between Phases VIe and VIc. In these phases (and in the following VIb Phase) the architecture is rectilinear and made with a timber skeleton. Timber, as explained above, features in the early levels in both the central Anatolian Plain and the Lakes District as well but mud brick soon thereafter becomes a preferred alternative in these regions (Duru 2012; Love 2013). The size of the posts and the distance between them differs through the phases at Barcın Höyük and both variables show a reduction through time.

Foundation ditches are lacking from VIe where houses are instead constructed with free-standing posts (fig. 3). In Phase VIId and VIc, posts placed 15–30 cm apart in deep ditches form the skeleton of the walls. Even smaller posts spaced closer together are used for wall construction in Phase VIb.

A conservative attitude towards building location can be observed at Barcin for centuries from VIe–VIc. Open areas in the settlement remain open and, conversely, areas with structural complexes remain built-up. Courtyard-type spaces flank the row of houses to the north and south in all of the above-mentioned phases. In VIId and VIc the linearly arranged structures have annex or veranda type spaces, possibly roofed, which extended south of the structures. The courtyard areas beyond the verandas appear to be used communally. Although the evidence is admittedly meager, such a settlement layout may have been a forerunner to the curved rows of houses around open areas that we know from the slightly later nearby sites of Aktopraklık and Ilıpınar (Karul and Avcı 2013; Roodenberg and Alpaslan Roodenberg 2013). The Barcin example may represent the earliest known example of such a settlement plan.

Pebble surfaces as well as clusters of fire pits indicate that courtyard areas were used for a variety of purposes including cooking and crafts. Burial of the dead was an additional function that the courtyards served. A large majority of the adult burials from Phases VIId and VIc were recovered from the communal courtyard area. The burials were inhumations lain mostly on one side in flexed position. Baby burials were occasionally found in the annexes, but most were buried beneath house floors or adjacent to the structures. The burials of children varied in location but some were found around the annex areas just south of the houses. Although the results from Barcin are earlier in date, one may surmise that this spatial separation of burials of various age groups in some ways parallels the changes that we see with the Upper Levels of Çatalhöyük East and Çatal West, where adults are the first to be placed outside the house (Marciniak and Czerniak 2007; Biehl et al. 2012: 56).

A row of buildings dating from level VIId1 was destroyed in a fire and is therefore relatively well preserved (fig. 4). Several architectural features of these buildings shows similarities with other regions and a comparison could give clues into how the spaces were potentially used.

Indoor Platforms. Structures 2a and 21 are both single-room structures, measuring 3.2 m by >4.6 m and 2.6 m by >2.85 m respectively (fig. 4). Their indoor spaces suffered from intrusive pits and ditches, but were preserved well enough to indicate the presence of a platform. These were made of a framework of horizontally placed thin wooden poles that were covered with mud-and-straw plaster. In Structure 21, the platform covered the full extent of the northern section of the room. The platform of Structure 2a was found only in the northeast quadrant, but as a result of a large intrusive pit it cannot be ruled out that it extended to

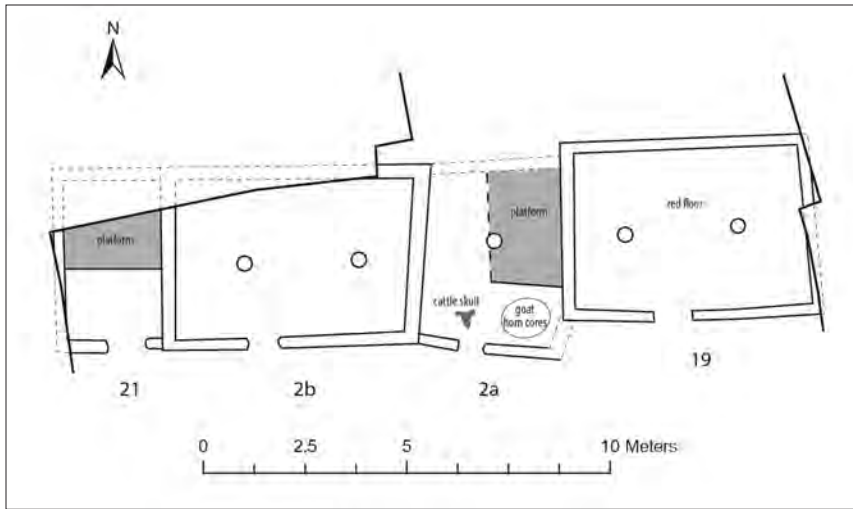


Fig. 4. Schematic plan of the Phase VIId1 structures showing the locations of the platforms in Structures 21 and 2a and the cattle skull and horn cores in the latter structure.

the western wall. Atop this platform in 2a stood a crushed but complete portable basin of lightly baked, red-painted clay with a flat base and vertical sides ($55 \times 25 \times 37$ cm).

The use of indoor platforms is clearly reminiscent of Çatalhöyük, and it is possible that they were likewise used for sleeping. However, the idea that the Barcın Höyük platforms carried the same symbolic connotations as they do in the Konya Plain is difficult to corroborate given that at Barcın no burials were placed underneath them.

Horns. Structure 2a also yielded several horn cores and an animal skull all incorporated in the architecture. What purpose they served in the room, whether decorative or ritual, is unknown. The horn cores appeared lying on a surface in a rectangular constellation and were initially interpreted as part of a bin (fig. 5; Gerritsen and Özbal 2013: 15). The possibility exists that they were displayed higher up, perhaps directly mounted to the wall or attached to a post. Although highly fragmented by the fire and hence difficult to identify, preliminary analyses indicate that the horns were not of cattle (contra Gerritsen and Özbal 2013: 15) and may, according to project archaeozoologist Alfred Galik, in fact be the horns of large specimens of domesticated goat. Moreover, near the threshold of the same room, excavations yielded a skull of domesticated cattle with the horn stubs buried under the floor. Whether this had any ritual significance is difficult to ascertain but its placement directly under a pair of preserved footprints impressed in the mud-and-straw floor could suggest so (fig. 6; Özbal and Gerritsen 2015: 33).

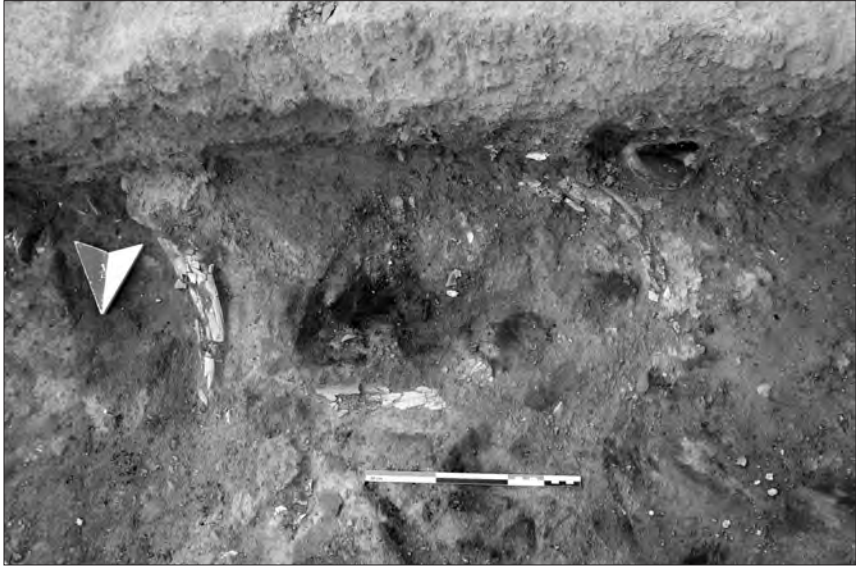


Fig. 5. Photograph of the group of horn cores on the burnt floor of Structure 2a.



Fig. 6. Photograph of the footprint discovered in the entrance of Structure 2a.

Animals selected for display at Çatalhöyük and many other Near Eastern sites are typically wild species (Hodder 1990; Russel 2012). Especially at Çatalhöyük, where the majority of animals available were domesticated specimens, the wild,



Fig. 7. Photograph of Structure 19 from Phase VI d1 taken from the southwest showing the red floor.

according to Hodder (1990) are “tamed” through their entrance into the domestic sphere. Yet, clearly, these issues seem to be of little concern to the inhabitants of Barcın Höyük. Moreover, the presence of goat horns also warns us of assuming too direct a connection with the symbolic worlds of Çatalhöyük, where aurochs and especially the bull were of great symbolic value to its inhabitants. One wonders whether the Neolithic population that colonized the Yenişehir Plain not only relied fully on domesticated stock but also simply lacked the ability to hunt large wild animals.

Red Floor. In addition to the above, an architectural element at Barcın Höyük that shows connections with sites in the Konya Plain and the Lakes District as well as other sites in the Marmara Region, is the discovery of a red floor in Structure 19 (figs. 4 and 7). Red-plastered floors, a recurrent feature across the Near East in the Neolithic period, are also noteworthy in central Anatolia at sites like Aşıklı Höyük (Esin and Harmanakaya 2007), Musular (Özbaşaran et al. 2012), and Çatalhöyük (Mellaart 1966), and in the Lakes District as known from Hacilar (Mellaart 1961). Red-painted floors also occur in both western and northwestern Anatolia, at Ulucak (Çilingiroğlu, Çevik, and Çilingiroğlu 2012: 149), Aşağı Pınar (M. Özdoğan 2014: 45), and Hoca Çeşme (Karul 2000: 13). Often associated with communal or ritual buildings, red floors carry a symbolic element across the Neolithic of Anatolia.

Barcın’s Structure 19 is a single-room structure measuring 5.7 m × 4.1 m. Undoubtedly, producing the red coloring agent and hence creating the red floor



Fig. 8. Photograph of the ground stone implements discovered in Structure 10 in Phase VIc. Many of the shown implements were found surrounding the anvil stone under which the figurines (both of which are shown in the photograph) were cached.

of this structure involved a significant effort. The composition of the floor has not yet been analyzed, but it is clear that coloring agents were mixed in with the soil matrix across the entire floor of the structure. It appears that the color was achieved through the mixture of red mineral matter, possibly ochre, and the pulverization of fire-reddened building materials and red stones.

Even though buildings with red floors across Anatolia are often thought to have had ritual importance, or often appear in structures likely used as community buildings, Barcın's Structure 19 yielded no special features that distinguish it in any way. This situation may be in line with Düring's argument that red floors can also appear in quite ordinary structures (2011: 81).

Phase VIc Workshop and Associated Finds. Structure 10 in phase VIc yielded what has been interpreted as a workshop area given the concentrations of hammer and polishing stones and related tools (fig. 8). Most notably, just south of this room but nonetheless associated with it lay a cache of clay figurines. Figurines at Barcın Höyük are rare and are usually found singly, but in this instance six figurines packed tightly together in a cache were discovered (fig. 9). The figurines had been left unbaked and had suffered from moisture. What prevented them from dissolving in the soil was that they had been placed beneath a well-worn upturned anvil or grinding stone, leaving little doubt that the figurines were deliberately deposited in this location.

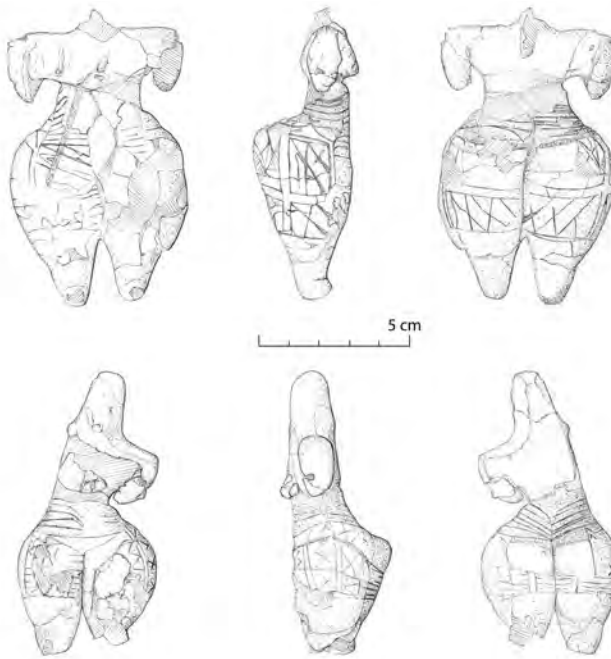


Fig. 9. A line drawing of two of the six figurines from the cache showing the incised detail on the buttocks, thighs and waists

Even though excavations at Çatalhöyük initially seemed to suggest that figurines were found in groups associated with hearths and grain-storage bins in “shrines” (Mellaart 1963a: 93), detailed context-based studies have been able to show that in fact, they were primarily discarded singularly in midden deposits and found in fill layers associated with houses (Hamilton 2005; Meskell et al. 2008). In fact, Lynn Meskell and co-authors (2008) have been able to show that figurines at Çatalhöyük, were rarely cached or intentionally buried, in contrast to materials such as animal bones or obsidian blades that are known to occur in hoards at Çatalhöyük (Carter 2007; Nakamura 2010). Such contextual analyses and the apparent disposable character of the Çatalhöyük figurines have allowed us to extract them from their former ritual-based interpretations (Mellaart 1963b). Nonetheless, groups of figurines, potentially deposited in caches, have been found in slightly later levels at sites in the Lakes District like Hacilar (Mellaart 1970: 166).

The incised decorations and the remnants of red and black paint around the buttocks and across the bodies of the Barcın Höyük figurines (fig. 9) suggest clothing or bodily decorations and resemble other examples from the Marmara Sea and surrounding regions (Hansen 2015: 278; M. Özdoğan 1999: 87). Such

incised body ornamentation, known from Balkan figurines (Bailey 1996; Biehl 1996) is also known from sites like Pendik and Barcın Höyük's later levels (Gerritsen, Özbal, and Thissen 2013a: 112; M. Özdoğan 2013: 218).

Pottery Associated with Barcın Höyük's Seventh-Millennium Levels

As described above, the earliest Neolithic levels at Barcın Höyük dating to the end of the first half of the seventh millennium BC hardly yielded any ceramics at all. In fact, the lowest subphases of VIe yielded none. Above this, excavations of the midden area in Trench L13 recovered 14 sherds per cubic meter of soil when compared with 128 sherds in the VIId levels (Gerritsen, Özbal, and Thissen 2013b). The ceramics in this phase are found in combination with large quantities of fire-cracked rocks, presumably cooking stones, which provided for indirect heat much the same way that we see clay balls being used at Çatalhöyük (Atalay 2013). We assume the stones were heated outside the container and thereafter added to vessels to heat liquids or semi-liquids (Özbal, Gerritsen, and Özbal 2012; Thissen et al. 2010). Nonetheless, the ceramics present have distinctive schist/mica temper and are thick walled. Though some would potentially have been of a character that could have been placed directly on an open fire, they do not seem to have been widely used in this way. Their rarity also suggests that food was cooked using alternative means and even perhaps with vessels made of perishable materials.

A transformation in terms of ceramic technology, cooking and food preparation takes place at Barcın Höyük in the following phase VIId when thin-walled vessels with calcite temper appeared. This technological improvement would have allowed heat to be conducted much more effectively than their Phase VIe predecessors (Gerritsen, Özbal, and Thissen 2013b; Thissen et al. 2010). Simultaneously, one notes an almost complete disappearance of fire-cracked stones.

By Phases VIc and VIb, some of the ceramics, in terms of ware, shape, and burnishing, resemble those from sites like Fikirtepe and Pendik, as described above. Also typical of this phase are incised boxes of which several examples including a complete one were also found at Barcın Höyük (fig. 10). The Barcın ceramic repertoire yields a continuous and gradual evolution of ceramics in Phase VIc from the earlier phases. The lack of a hiatus and the evidence of direct evolution suggest that Phases VIId and VIe at Barcın form the foundations of what eventually becomes the Fikirtepe ceramic horizon. Levels VIa and VIb from Barcın, dating to the last few centuries of the seventh millennium, show poor preservation and much pit damage. The ceramics from these phases show parallels with sites like Fikirtepe and Yenikapı (Kızıltan and Polat 2013: 142–43; M. Özdoğan 1999).

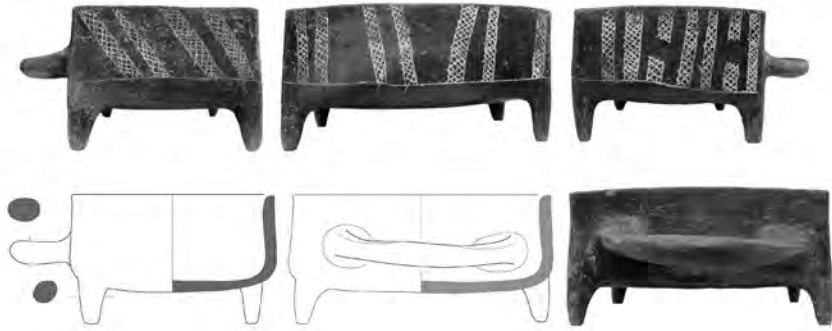


Fig. 10. An illustration and associated photo of the incised rectangular box from Barcın's VIc Phase, typical of Fikirtepe sites in the Marmara Region.

Conclusions

Despite the possible continuity in lithic tool assemblages in the eastern Marmara Region seem to suggest continuity between pre-Neolithic and Neolithic times, the inhabitants of Barcın Höyük can hardly be assumed to be descendants of Mesolithic groups from this region given their heavy reliance on and familiarity with domesticated animals and crops. Some form of migration is likely, although the current data cannot confidently determine whether the inhabitants of Barcın Höyük migrated directly from either Çatalhöyük or the Lakes District. It is likely that Barcın Höyük's direct predecessors have to be sought among sites dating to the first half of the seventh millennium BC in the Eskişehir, Kütahya, and/or Afyon region. In this respect it is interesting that the schist and mica tempered VIc ware seem to find its best parallel in the Demircihöyük Ware A (Seeher 1987). Nonetheless, the presence of obsidian sourced to central Anatolia provides definitive evidence of contacts with the Konya Plain (Milić 2014).

The most obvious detachment between Çatalhöyük and Barcın Höyük is the fact that in the first half of the seventh millennium the former lacked domesticated cattle, while the inhabitants of Barcın Höyük were established cattle herders from the earliest levels onwards. If the Barcın farmers were instead originating from the Lakes District, then the first colonists must have made a conscious decision to leave domesticated pigs, which comprise a substantial component of the food economy of sites like Bademağacı, behind. The developed dairying present at Barcın which appears to be a notable element even in the earliest levels also yields few insights into region of origin because too little is known about the milk production strategies of sites such as Çatalhöyük and Bademağacı (but see Pitter, Yalman, and Evershed 2013; and H. Özbal et al. 2014).

Architecturally speaking, the farmers that colonized Barcın Höyük, living in rectilinear houses, present some world views that are in line with the Neolithic

understanding and customs of the time. This includes the presence of rooms with what appear to be decorative horncores and as well as elevated platforms and red-painted floors. However, rather than pointing to a given region of origin, such characteristics likely represent more general Anatolian Neolithic lifestyles, customs, and rituals.

Overall, this initial and rather superficial analysis suggests, therefore, that at present no clear region of origin can be pinpointed for the first settlers at Barcın Höyük. It seems clear, however, that they participated in multiple spheres of interaction and exchange of knowledge, practices, and ideas. A more in-depth mapping and conceptualization of these spheres will constitute a next step in understanding the neolithization of the Marmara Region.

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Early Farmers in Northwestern Turkey: What Is New?

MEHMET ÖZDOĞAN

Abstract: Northwestern Turkey, the borderland of Anatolia, provides an optimal opportunity for detecting changing modalities in the social and cultural setup of Late Neolithic communities that had just moved in to that region. In this respect it is worth noting that the number of excavated Neolithic sites is sufficient for defining interregional differences and for drawing a generalized picture of the cultural era. Moreover, the region in the Late Neolithic had just been settled by Neolithic communities, thus the material assemblages were all new to the region, having evidently originated in an area further away, somewhere in the core area of primary neolithization. With this in mind, here we shall present an unconventional, reversed approach to the Late Neolithic era by looking back towards the core area from the periphery, also noting the spatial distribution of various Neolithic groups by highlighting the distinctive features of their assemblages. Among other issues discussed are the modalities of Neolithic expansion from the core area to regions beyond the initial area of neolithization. The Neolithic Package will be scrutinized to answer what went and what remained during the dispersal of the Neolithic way of life. Most evident is the distinctness of the Neolithic package in the eastern parts of the Marmara region from those of the Aegean and the Balkans, strongly suggestive of having origins in the different sectors of the core area.

Keywords: Marmara Region, Late Neolithic, early farming, northwestern Anatolia, Aşağı Pinar, neolithization, Fikirtepe Culture

The Late Neolithic period is the time when marked differences became crystallized between the eastern and western parts of the Anatolian peninsula. During this time period, while socioeconomic modalities of farming were being institutionalized in the eastern parts, moving into Halaf and related cultural settings, small farming communities were mushrooming in the western parts of the peninsula, regions that can still be considered peripheral to the main areas of primary neolithization. In associating the core with the periphery, the conventional, and probably the more correct way, would have been to consider peripheral areas from the standpoint of core areas. This paper presents a reversed view by drawing a picture on Late Neolithic cultures of Anatolia as seen from the western

periphery. In this respect any quest for the Neolithic of western Anatolia eventually has to face a number of questions on which at present, due to deficiency of research, it is not possible to reach a consensus. Since the second half of the last century, the questions that are being asked about how and when the Neolithic way of living appeared in the west—that is regions beyond Fertile Crescent—have been considerably modified, and some more or less resolved, evidently leading the way to new questions. Unfortunately, the questions that are most crucial to resolving the primary question are the ones with the least amounts of data to allow an answer. Thus, some of what is presented below should be considered generalizations, based not always on concrete evidence but on insights. Besides the primary question of when and how the Neolithic way of life reached western parts of Anatolia, an overview covering various other issues that are either relevant or consequential to the primary question will be presented, such as what was the situation prior to the coming of farmers, how did the indigenous and migrant communities interact, and which components of the Neolithic Package came with the migrant farmers and why?

Our main focus is northwestern Turkey, the region around the Sea of Marmara, including eastern Thrace, critically located at the meeting point of three distinct cultural zones, western Anatolia, the Aegean, and the Balkans. Any narrative on the prehistory of northwestern Turkey faces the ultimate question of deciding which neighboring countries' chronological denominations to use, as the chronological denominations have different implications in Turkey, in Greece, and in the Balkans. For example, the designation Late Neolithic in Anatolia would cover Middle Neolithic in the Aegean but Early Neolithic in Bulgaria; an issue that can easily lead to misunderstandings particularly in presenting supra-regional perspectives combining Anatolia, the Aegean, mainland Greece and Bulgaria. Here we will be using the conventional Anatolian terminological denominations.

The Problem of the Mesolithic/Epipaleolithic Substratum: Encounters

Even though the quest for the Mesolithic substratum is difficult to resolve, there is now some scanty information on the presence of Mesolithic communities prior to the advent of Neolithic farmers, however much more work is still needed before drawing conclusive remarks. As is the case for most of the Anatolian peninsula, evidence of Mesolithic or Epipaleolithic occupation is extremely scanty also for the northwestern parts of Turkey. Even if it may be argued that the lack of Mesolithic occupation is due to an insufficiency of surface surveys, with the exception of coastal areas, no substantial evidence of a cultural horizon preceding the Neolithic period has shown up either in intensively surveyed regions or in caves with exposed sections. Evidently, concerning the presence of hunter-

fisher Mesolithic communities the most extensive and dependable evidence is from the cave sites along the Gulf of Antalya (Kartal 2002); likewise there is also an increasing number of similar recoveries along the Aegean islands and littorals (Çilingiroğlu et. al. 2016, 2018; Efstratiou et al. 2013; Kaczanowska, Kozłowski, and Sampson 2008; Kaczanowska and Kozłowski 2013; Kotsakis 2001; Runnels 2001; Sampson 2014). Even though the number of sites is rather few, and assemblages scanty, there is sufficient evidence to predict the presence of communities all along the coastal strip of both the Mediterranean and the Aegean. However, assigning exact dates to most of these assemblages is highly problematic. Mesolithic communities seem to be present during the early part of the Holocene as indicated by the early presence of Melian obsidian in mainland Greece, and seemingly also at Antalya cave sites. At least it is clear that open sea faring was already being practiced during the early stages of the Holocene, in time prior to the initial appearance of Neolithic communities. Considering that these coastal communities were experienced mariners, with justification it may be concluded that they stimulated or even contributed to the movement of Neolithic communities towards the Aegean. Considering the recent assessments of the early Neolithic assemblages of mainland Greece and the Aegean littoral of Turkey, which clearly indicate “maritime expansion” of initial Neolithic communities, we may surmise that the maritime expansion was also the means of interacting with the farming communities in the eastern Mediterranean from the beginning (Özdoğan 1998, 2008, 2014c, 2014d: 84; Perlès 2005). Nevertheless, the crucial question would be whether Mesolithic communities were still in the region when the first farmers moved in, and if so the mode of encounter between the two groups. In this respect, the most confusing evidence comes from the Antalya cave sites, which clearly cover the early part of the Holocene. But the extent to which these Mesolithic/Epipalaeolithic communities were still in existence at the time when Neolithic farmers arrived is also debatable, as there is nothing in the lithic assemblages of the Neolithic sites of Antalya that is reminiscent of the prolific microlithic industry of the Öküzini type (Kartal 2002). The fact that all of the earliest Neolithic settlements in the western parts of Anatolia have been established on virgin soil with no indication of even a preceding campsite assignable to the Mesolithic communities leaves the question of the interaction between the farmers and foraging fishers open for the time being.

Besides the cave sites along the Antalya Gulf, the most solid evidence of Mesolithic communities is from the Black Sea littoral, where over a hundred lithic sites with microlithic assemblages, located on coastal fossilised sand dunes, have been recovered (Gatsov and Özdoğan 1994). Named after the type-site of Ağaçalı, the presence of this culture, besides its strong presence on either side of the Bosphorus, has also been attested on coastal and riverine terraces along the eastern parts of the Sea of Marmara. As no site of this culture has been excavated, there

are no available absolute dates, and an assessment based of typological study is not much of help beyond placing the Ağaçlı culture to anywhere within the early Holocene. However, as will be further discussed below, there are some indications that they maintained a presence up to the time when Neolithic farmers arrived in the eastern parts of the Sea of Marmara (Özdoğan 2014b: 36). Intensive surface surveys carried out in various parts of the eastern Marmara Region have made it possible to draw, more or less precisely, the areal distribution of the Ağaçlı group: in spite of its extensive presence along the Black Sea coast and around Istanbul, there is no evidence of these communities further inland on the Anatolian side, particularly in the basins of İznik, Yenişehir, and İnegöl or anywhere along the valley of the Sakarya River. Recent work in these areas, at sites such as Barçın, Menteşe, and Ilıpınar located at the alluvial plains mentioned above, have revealed that the Neolithic farmers had arrived there by the first quarter of the seventh millennium BC, but their expansion to the region of the Ağaçlı group was delayed for at least two centuries, seemingly both communities living side by side during that period of time. Thus, in this respect eastern Marmara provides ample evidence in drawing a picture of the modalities of encounter between local Mesolithic communities and farmers moving into the region, seemingly from the Lake District through the valley of the Sakarya River.

The alluvial plains of İznik, Yenişehir, and İnegöl are at the northern end of the Sakarya River Valley, before opening up to the deltaic plain. There, excavated sites such as Ilıpınar, Menteşe, and Barçın have revealed a long and uninterrupted sequence on the development of the Early Neolithic period, conventionally addressed as the Fikirtepe Culture (Gerritsen, Özbal, and Thissen 2013; Roodenberg 1995, 2008, 2011). Thanks to the extensiveness and scrupulousness of the methods of recovery, it is possible to reconstruct the cultural assemblage and the details of the Neolithic Package that had arrived and developed on the southern flanks of the eastern Marmara Region. Ilıpınar, Menteşe, and Barçın were typical farming communities living in organized villages where buildings were rectangular in plan with walls of mud-slab framed by wooden posts. As indicated above, expansion of this culture from the İznik–Yenişehir area to the territories covered by the Mesolithic Ağaçlı culture that is mainly to the coastal areas around Istanbul seems to have been delayed for almost two centuries. The basal layers of the earliest Neolithic settlements established within the territory of the Ağaçlı group, mainly Yenikapı, Fikirtepe, and Pendik, strongly suggest that two groups had eventually merged with each other, seemingly after establishing mutual contact for about two centuries (Özdoğan 2013a, 2014d; see also Karul this volume).

The pottery of the newly established Neolithic coastal sites is identical to those of the inland Yenişehir–İznik basins; likewise they possess the same primary domesticates. On the other hand there are considerable disparities in the pattern of the settlements, the architectural design of the buildings, the burial cus-

there are also several other burials with typical features of the Anatolian Neolithic.

Neolithic farmers moving into the eastern Marmara, after merging with the local communities, terminated their migration. From the beginning of the Fikirtepe Culture, by the mid-seventh millennium through the entire span of the sixth, in strong contrast with other regions of secondary neolithization, the Neolithic of the eastern Marmara developed locally, passing through the archaic Fikirtepe, classical Fikirtepe, Yarımburgaz 4, and Yarımburgaz 3–2 stages without interacting with neighboring regions (Özdoğan 1997, 2013a, 2014b). The cultural sequence at Aşağı Pınar, located in eastern Thrace within easy reach of Istanbul, though contemporary with the eastern Marmara Neolithic sites, reveals totally different assemblages identical with those in the Aegean and Bulgaria. In spite of the large extent of the excavated area, not a single sherd of Fikirtepe or Yarımburgaz type have been recovered at Aşağı Pınar. It thus seems evident that although they shared the same origins as those moving towards the Aegean, Neolithic farmers arriving in the eastern Marmara Region, after coalescing with local Mesolithic communities, developed a distinct identity.

Westbound Expansion of the Neolithic Way of Living: Who Was on the Move?

Since the early years of research, discussions on the appearance of farming in areas west of the Anatolian peninsula had its focus on the presence and/or absence of domestic animals and cultivated crops, the so-called primary components of the Neolithic Package; answering this question was considered to be of particular significance for sites in Europe. Even though there is some discrepancy in the distribution pattern of pigs, more or less all four domesticates were present in almost every site; their ratios varied but they all had reached the newly neolithized regions. Accordingly, their presence was not of much help either in defining the trajectory or the modality of dispersal. On the other hand, a holistic approach to sorting out the Neolithic Package provides a basis for comparing what went with the migrating groups and what remained in the core area (Özdoğan 2010, 2011).

Even though going into the particulars of such an analysis is not possible in the scope of this chapter, a conspectus of some issues that I consider important for developing insights on the mode of Neolithic expansion will be presented here. To clarify what will be presented below, it is necessary to examine the structure of the primary core area and the changing picture of the Pre-Pottery Neolithic of southeastern Anatolia. During the last decade or so, the conventional view of the Pre-Pottery Neolithic communities of southeastern Turkey has gone through dramatic changes, from simple egalitarian villages striving to survive to highly sophisticated stratified communities living in orderly, well-maintained

settlements. Overall, the Pre-Pottery Neolithic of southeastern Turkey presents a picture of a strikingly dynamic, innovative structure open to change; this is rather unusual for early prehistoric societies, which usually conservative and highly resistant to change. It all leads to the theory that the communities were organized and controlled by a distinct group. The presence of monumental cult buildings that are as regular as the temples of later periods, the extensive presence of prestige objects that require time-consuming specialized craftsmanship, rigorously ordered settlements, organized large-scale labor not only for the construction of cult buildings and the making of terrazzo floors, but more for the burying of buildings strongly suggest the dominant role played by spiritual elites. In extensively excavated sites, marked differences between the community and the dominant group present the picture of a dualistic society (Özdoğan 2012, 2014d, 2015c, 2015a). Some of the most apparent disparities between the social and symbolic worlds of the people and dominant group will be noted briefly below.

All anthropomorphic representations within or related to the cult buildings are male; likewise some of the quadrupeds at Göbeklitepe have clearly depicted phalluses (Özdoğan 2001); phallic figurines and even statues exist in abundance. On the other hand, anthropomorphic figures within the domestic areas are mostly crudely shaped female figures of clay, exaggeratedly depicted in pregnancy. Yet, another discrepancy is with the animal depictions; statues and bas-reliefs in and around cult buildings present a symbolism based on nature, all sorts of living creatures regardless whether or not they are consumable were depicted; these include water birds, birds of prey, snakes, insects, lizards, quadrupeds, and so on. On the contrary, crude figures, mostly of clay that are found within domestic contexts are all edible animals. Distribution of prestige objects and raw materials within the settlement are also suggestive of stratified social structuring.

The picture that can be drawn for the Neolithic societies of the newly neolithized regions differs drastically from this. First, settlements in the western regions present a far more egalitarian picture than those in the core area, strongly implying that the dominant social class, whether it be the spiritual elite or something else, did not join up with the migrating groups; rather they remained in the homeland. Thus, the movement once denoted as “Westward Ho” (Rowley-Conwy 2011) seems to be the migration of the folk, farmers, and herders, but not of the dominant elite. Some of the specialized craftsman, particularly of utilitarian objects, must have also joined the migration (Özdoğan 2014a).

The Loss of “Social Memory” and Becoming a Conventional “Farmers Community”: A View from Northwestern Turkey

The number of excavated Neolithic sites in northwestern Turkey has now mounted to twelve, making it possible to make a reasonably secure list of the

	WESTERN MARMARA	EASTERN MARMARA
cult table		
lugs	 tubular	 ledge
surface	 red slip	 dark
surface finish	 roughening common	 all burnished
incise decoration		
mat-impressed base		none
base	 raised	 flat
pintadera		none
clay figurine	 common	rare
festooned bone object		none
bone spoon		
bone polisher		
blade		
bullet core	none	
obsidian	none	
polished celt		rare
burial	none	
ditch		

Fig. 2. Comparative chart of eastern and western Marmara Neolithic assemblages.

material assemblage (fig. 2). Extensive exposures attained at some sites such as Aktopraklık, Ilıpınar, Pendik, and Aşağı Pınar have made it possible to view the social structure of the settlements more clearly than in other regions. Architectural remains exposed in all of these sites reveal a more or less homogenous distribution of similar households, with every building similar to the other, to an almost repetitive level with no apparent markers of social stratification. Apparent also is the decline in innovation, the earliest horizons of the Neolithic settlements in the newly habited zones being somewhat more elaborate than later ones. This is best exemplified at Aşağı Pınar where a full sequence of consecutive Neolithic layers was exposed in considerably large areas. The buildings of the earliest Neolithic phase of occupation, Layer 7, compared to those of later horizons, are more elaborately built, with plastered and red-coated floorings. Likewise considerable organized input has been put in the construction of ditches during Layer 7. However, from Layer 6 onwards, through the entire span of the Aşağı Pınar settlement, numerous buildings have been exposed, every building in any given layer being more or less similar to the other, being almost repetitive with no apparent markers of social stratification. It seems justified to suggest that the inhabitants arrived with the social memory of the settlement design of the core area, but with time, their structures became less sophisticated, giving way to “normal” villages.

It is also of significant that there are no new elements in the Neolithic assemblages of northwestern Turkey, with the exception of adaptation to the wooden post architecture; it is possible to trace every component of the material assemblages of the region to somewhere in the primary core area, though the social or symbolic value attained might be different. For example, some components that are rather rare or insignificant in the primary core area, such as bone spoons, pintaderas, or cult tables appear in sites of northwestern Turkey as the prime objects of prestige (Özdoğan 2010). Likewise, the so-called festooned bone objects (also considered as snake symbols), which are insignificant in the east, are rather common in most Balkan assemblages.

As noted above, there is nothing new added to the Neolithic Package in the areas of late neolithization and almost all components of the inventory can be traced to somewhere within the core areas of primary neolithization. However, a one to one comparison between the material assemblages of the core zone with the newly settled regions is not possible. That is, the ancestral form of any given artifact recovered in the West can be traced to a certain part of the primary core, but a different artifact will point to another part of the core. The mismatch between the assemblages suggests that the migration of the farmers did not take place as organized groups starting from point A and settling all together after reaching the target area B; any further movement later in time would inevitably carry the traits of this group. On the contrary, the dissemination of the Neolithic way of living seems to have been as a segregated movement, individuals or small

groups from every part of the core area moving to different parts in the West, eventually founding new clusters to become new cores in the process of the expansion (Özdoğan 2011). It is worth remembering that it took over half a millennium for the first farmers leaving the Near East to reach southeastern Europe. It thus seems evident that the models formulated to explain Neolithic expansion within Europe such as “wave of advance” to “leap-frog” (Harris 2003; Omrak et al. 2016; Pinhasi 2003; Richards 2003; Zvelebil 2002) whether based on biogenetic, demographic, or archaeological evidence are not applicable to Anatolia.

On the other hand, some common elements of the material assemblages of the core area are either totally absent or extremely seldom in the west. Among these, most specific are the prestige objects or ornaments of high-skill workmanship such as batons, grooved-stones, decorated bone, and stone plaques. Even though some of the ornamental objects, such as the stone bracelets and beads, occur both in the core and in the newly settled regions, those in the latter are ersatz by all definitions. In this respect, while stone bracelets in the Pre-Pottery sites are profiled and elaborately decorated, those in western Anatolia are simple stone rings: however in Thrace and the rest of the Balkans, stone bracelets are substituted by clay ones (Aytekin 2015). An almost similar case can also be observed in architecture: special or “cult buildings” of the East mostly have pink-colored terrazzo floors that require considerable labor input and technology to manufacture. The so-called terrazzo floors of central Anatolia, such as those at Aşıklı and Höyücek are actually ersatz imitations. Further to the West, as at basal Hacılar, Girmeler (Takaoğlu et al. 2014), Ulucak, and Aşağı Pınar 7, they are replaced by red ochre-covered clay floors. At Hoca Çeşme 3, the flooring of one such building was apparently made to imitate terrazzo; it had a thick foundation of small pebbles embedded in loose lime mortar and a surface coated with ochre and burnished. It seems thus reasonable to surmise that farmers on the move stayed with what they were used to, but with considerable limitations with respect to organized labor and specialized craftsmen.

A high motivation for innovative developments is a significant feature of the early Neolithic stage in the eastern regions of Anatolia and can be observed in repeated changes in almost all components of the assemblages. On the other hand, newly founded settlements in the West within a short period of time after being fully established, become conservative and lost the momentum for innovative changes. Further away from the primary core, particularly in the Marmara Region, the loss of incentive for technological innovation becomes much more apparent. With the exception of some pottery of distinctive fabric or decoration that constitutes a small portion of the assemblage, the bulk of the material sustains almost with no apparent changes for several millennia. Through most of Anatolia even the coarse wares change with time, making it possible to distinguish pottery assemblages by main cultural phases. On the other hand, in Thrace

for example, the dominant coarse ware, the so-called surface-roughened pottery of the Neolithic assemblage continues with hardly any detectable change up to the Iron Age, making it difficult to date, particularly in surface collections. This all leads to the theory that, as social memory of the fabulous settlement of the core area faded, migrant populations very quickly became simple farmers, possibly living much more happily.

The Neolithic of Eastern Thrace: Distinct Neolithic Packages, Distinct Origins

The region around the Sea of Marmara, and in particular eastern Thrace, had always been considered the main trajectory in transmitting the Neolithic way of life from Anatolia to the Balkans. Prior to the beginning of excavations at Aşağı Pınar, Fikirtepe, and Pendik were the only early assemblages of the Marmara Region (Özdoğan 1985, 1997). Due to the critical geographical location of these sites, it was a priori assumed that the earliest Neolithic in Bulgaria derived from Fikirtepe Culture. However, in spite of an insistent search for similarities between Fikirtepe and Karanovo, it was not possible to find convincing material analogous to each other; first, Fikirtepe Culture lacked the most apparent traits of Bulgarian Neolithic such as painted wares, red slip, and so on (fig. 3). It is for that reason that relative dating of the Fikirtepe remained controversial for decades, some colleagues being inclined to place Fikirtepe in a later time period (Nikolov 1989, 1993).

The chronological position of Fikirtepe was secured with the excavations at Ilıpınar in 1987, placing it at the very beginning of the Karanovo I period. However, this inevitably brought to the fore the discrepancy between Fikirtepe and Karanovo; likewise 1986 excavations at the cave of Yarımburgaz, revealing a sequence of artifactual assemblages postdating Fikirtepe, had almost nothing in common with those of the Balkan Neolithic cultures (fig. 4). Thus, during our early work in the region, a marked difference between the eastern Marmara and Thracian Neolithic assemblages was a dilemma that we had to face. In this respect Hoca Çeşme was the first site in eastern Thrace that revealed material, which, while being similar to those of Karanovo I–IV in Bulgaria, again had no element of either of Fikirtepe or of Yarımburgaz (fig. 5). It only became clear after our work at Aşağı Pınar, located in the center of eastern Thrace, that the Neolithic Packages of the eastern Marmara and of Bulgaria, including most of Thrace, were of different origins (figs. 6 and 7). During the last decades, excavations at Menteşe, Barçın, and Aktopraklık, and at Yenikapı, have greatly elaborated our knowledge on the emergence and development of Neolithic cultures in the eastern parts of the Marmara Region. Likewise, in the western parts of the Marmara Region excavations at Uğurlu and at Gülpınar have also provided

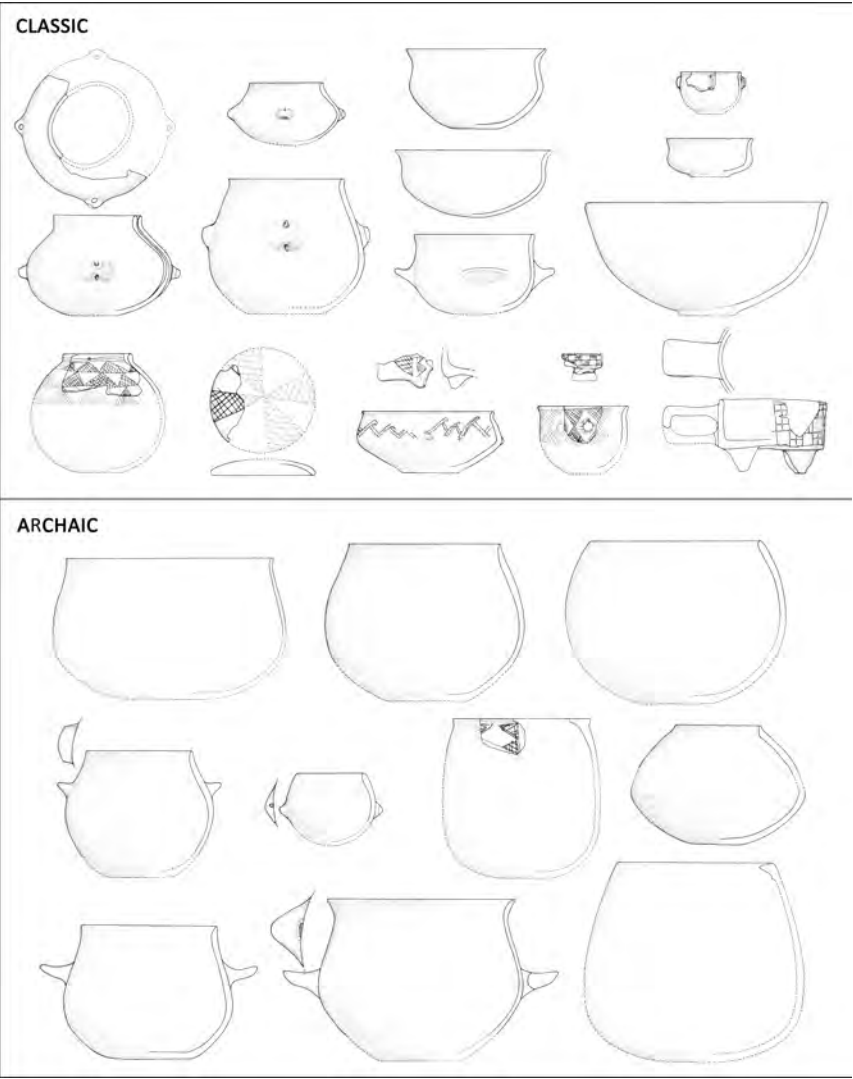


Fig. 3. Major vessel forms of archaic and classical Fikirtepe assemblages.

further evidence connecting the Bulgarian sequence with those of the Aegean littoral, further elaborating on the presence of the two distinct Neolithic Packages that we briefly noted above.

Neolithic assemblages of the Marmara Region have been published extensively through occasional updates (Özdoğan 2014b; Eres et al. 2015; Özdoğan, Başgelen, and Kuniholm 2013); here I shall note some particulars that feature distinct traditions in what might be considered as a micro-region such as around the Sea of Marmara. We are aware that some of the issues that will be presented

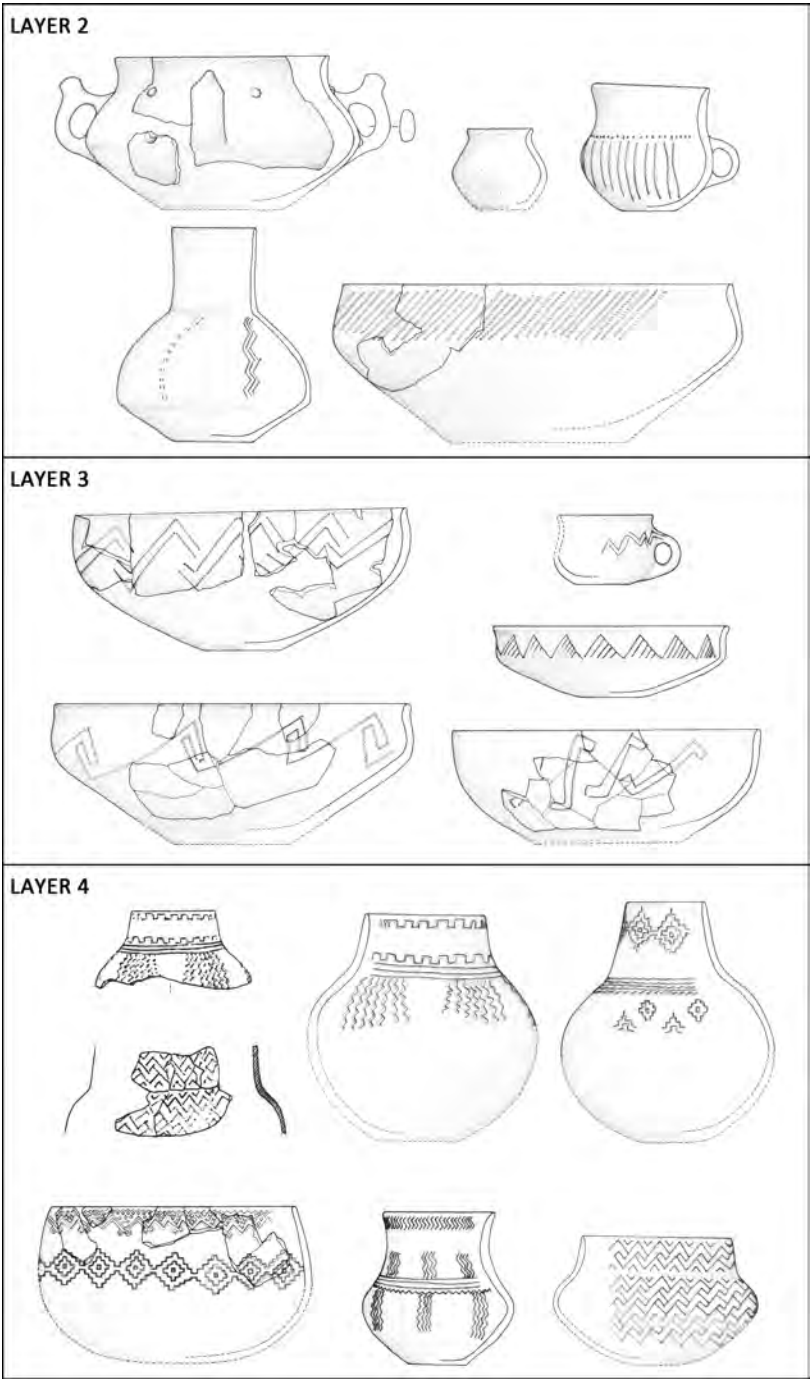


Fig. 4. Major vessel forms of Yarımburgaz Layer 4, 3 and 2 assemblages.

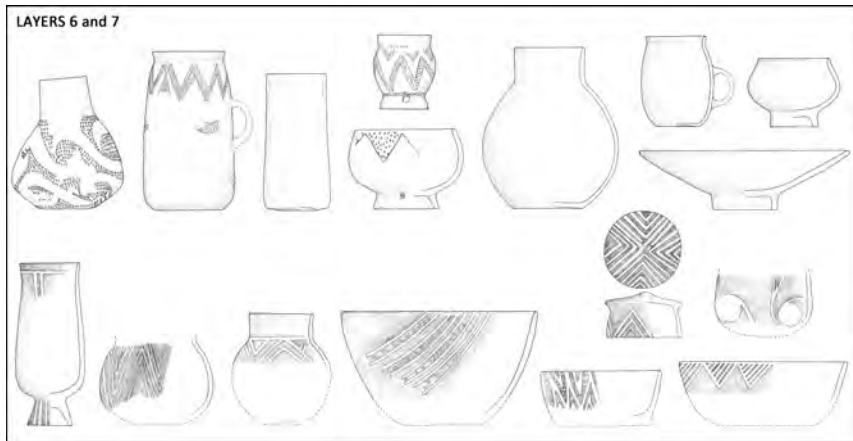


Fig. 5. Major vessel forms of Aşağı Pınar Layers 6 and 7 assemblages.

below have already been stated, though in different contexts; thus, the following is a conspectus of the general picture.

Coastal areas around Istanbul, both along the Sea of Marmara and the Black Sea, were densely populated by Mesolithic communities, seemingly living in simple huts, fishing, collecting molluscs, and hunting. Though they utilized unidirectional single platform cores and direct percussion, the lithic industry consisted of microlithic elements and also macro-tools including round scrapers, keeled scrapers, macro- and microblades, and some geometrics.

Migrant farmers must have come from central Anatolia, seemingly from the Lakes District following the valley of the Sakarya River. They had rectangular buildings, mostly mud-slab walls; significantly, different from all other Neolithic groups moving towards the Aegean and Balkans, they arrived with the burial customs of central Anatolia. Along with intramural burials, extensive cemeteries have been recovered in close vicinity of the settlements. Significant in their material assemblage is that polished stone artifacts are extremely rare, though when present are of high workmanship. Likewise clay figurines and ornamental objects are extremely rare compared with other groups. Pressure flaking, prismatic and bullet cores, with a strong component of microblades comprise the lithic industry. Their subsistence was primarily based on farming.

The movement of the farmers stopped before entering the territory of the local Mesolithic community; even after both groups merged, seemingly peacefully, with each other, there was no more migratory movement or expansion of the Neolithic model either into Thrace or to any other discernable region. The assemblages of the Neolithic settlements display the characteristic features of both local Mesolithic and migrant farming cultures, as best exemplified at Pendik. There, several burials—under the floors of huts, in open spaces, but also collec-

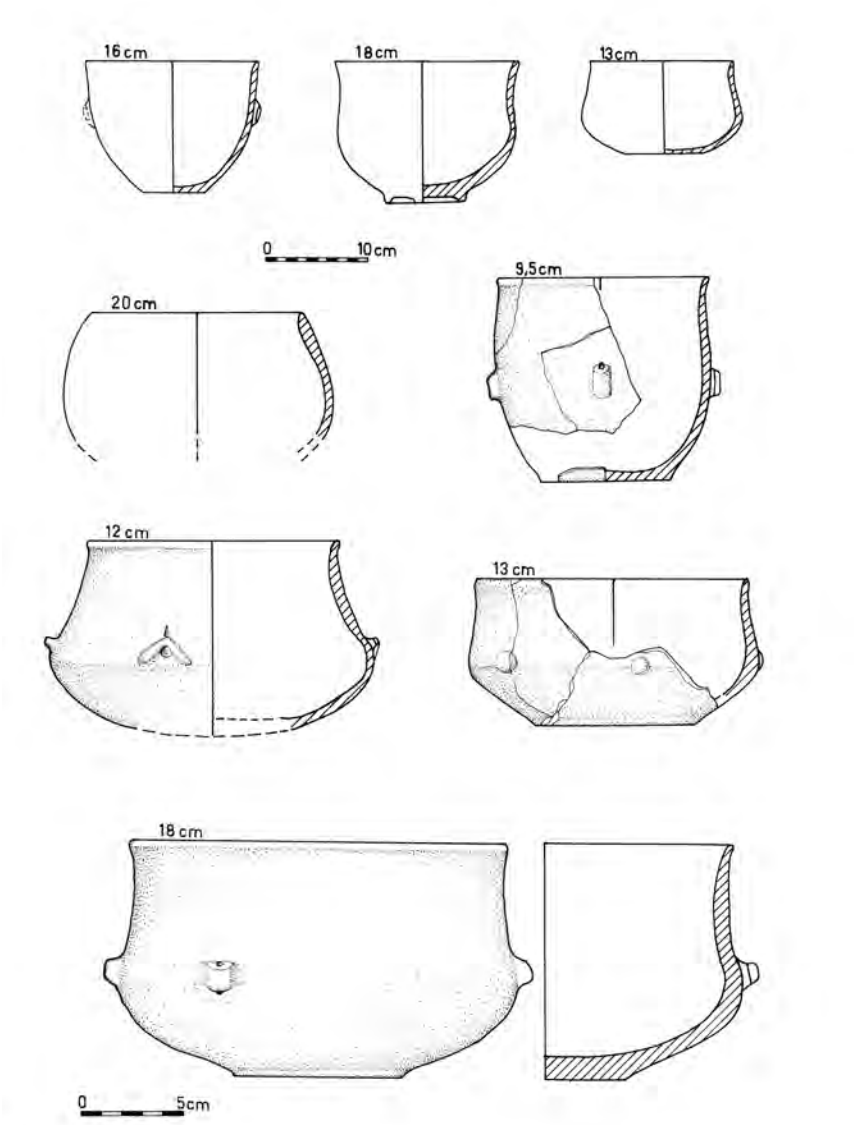


Fig. 6. Major vessel forms of early Hoca Çeşme assemblage.

tive near to the settlement area—have been recovered. In spite of the wide extent of the excavation, the number of polished-stone artifacts, such as celts and adzes is extremely few, and only two figurines have been recovered. As Fikirtepe and at Yarımburgaz, mollusc collecting, open-sea fishing, and hunting of deer are still as important as farming (Boessneck and van der Driesch 1970; Meriç et al. 1988; Röhrs and Herre 1961).



Fig. 7. Pendik, mud-slab rectangular building. (Photograph courtesy of Istanbul Archaeological Museums.)

Eastern Marmara seems to have developed locally, almost totally independent of events in other newly neolithisized regions; nevertheless, some of the western traits, such as red surface coloring of pottery and tubular lugs had some influence in the region during the later stages of the Fikirtepe Culture, seemingly being derived along the southern shore of Marmara, as indicated by the excavations at Aktopraklık. Nevertheless, there was no contact with the rest of eastern Thrace up to Middle Chalcolithic Töptepe phase, somewhere around 4800 BC.

Western parts of the Marmara Region, as revealed by the excavations at Uğurlu and Hoca Çeşme, had multiple flows of endemic movements after the arrival of a first group of migrant farmers evidently arriving via the Aegean. Even though there are some indications, particularly from the İzmir region and as well from mainland Greece, that initial movement took place during the first quarter of the seventh millennium BC; its penetration into Thrace must have been around 6400 BC. Nevertheless, the initial presence of Neolithic communities in the west must have been rather thin and sporadic, becoming consolidated sometime around 6200 BC. Interestingly, by the turn of the seventh to the sixth millennia, there is an almost sudden mushrooming of Neolithic settlements almost all over the Balkans, from the Aegean littoral up to the Danube, more or less sharing similar cultural traits. Aşağı Pınar shares the same basic traits of all other sites in southern Balkans, conventionally addressed as the Karanovo culture.



Fig. 8. A group of vessels from Aşağı Pınar Layer 7.

Here, I want to point out some significant differences between the Aşağı Pınar-Karanovo group and those of the eastern Marmara (fig. 8). First, in Thrace, there are no burials, or rather extremely few, either in or around the settlements; human remains were restricted only to the sides of the ditches. Also different from the assemblages of eastern Marmara, clay figurines and polished stone tools are in abundance both in typological variety and in quantity. On the other hand, all Karanovo sites, including Aşağı Pınar and Hoca Çeşme, lack pressure flaking, microblades, and other lithic implements, the so-called Karanovo blades being the only flint implement of any distinction (Gurova 2011; Tsonev 2003). Following the establishment of the Neolithic way of life in Thrace and in the Balkans, relations with the core area seem to have ceased, and a new zone of interaction was formed in southeastern Europe; going through adaptive stages to the wet and temperate environment of the Balkans, the region developed as a new or secondary core area for further advancement of Neolithic cultures into Central Europe.

A Final Remark

The region around the Sea of Marmara has always been considered either a bridge or a barrier; recent evidence draws a far more complex, multifarious picture that can be categorized neither as bridge nor barrier. Intensive work in the region, both surface surveys and excavations, have made it possible to make a preliminary assessment on how the process of neolithization took place; needless to say, there are still considerable lacunae in our knowledge that need to be filled by further research. Recent excavations at sites such as Aşağı Pınar in Turkey and Yabalkovo in Bulgaria (Roodenberg, Leshtakov, and Petrova 2014) have given results that have revolutionized our way of looking at the neolithization of south-

eastern Europe. It is evident that, after each season's work, we will be forced to revise our thinking, and more time is necessary before our ways of thinking can process all the data.

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Subject Index

- 8200 cal BP Cold Event, 6, 17–33, 63,
120, 160, 166, 182, 185
- abandonment, 6, 18–20, 23, 30–32,
41, 109, 116, 119–20, 139, 142, 143,
150, 152–54, 157–59, 170, 173, 174,
178, 211, 223, 225, 252–54
- Actor Network Theory, 257–58
- Aegean islands, 257–66, 309
- agglomerating settlement pattern,
124, 173, 180, 183, 185
- ‘Ain Ghazal, 22, 23, 25, 26, 30, 43–47,
54, 64–66, 77, 83, 89–90
houses, 45
- Aktopraklık C, 7, 8, 252, 271–80,
282–84, 288–89, 315, 317, 322
burials, 275, 277
huts, 275, 277
lithics, 278–79
pottery, 275–78
- Anatolia, northwestern
chronology, 271–72
geography, 271–72
Neolithic in, 281–83
settlements, 273–81
- animal husbandry, 7, 182, 205, 249,
283
- antler, 245–46
- Aşağı Pınar, 11, 288–89, 296, 309,
310, 312, 315–17, 320, 322–23
- Aşıklı, 5, 83, 185, 220, 226, 296, 316
- Bademağacı, 183–84, 193n1, 195,
199, 203–5, 209–11, 233, 289, 292,
300
- badia, 48–49, 55
- Balikh Valley, 104, 108–10, 114–15,
121–23
- Balkans, 9, 11, 262, 288, 308, 316–17,
320, 322–23
- Barcın, 7–8, 245, 251, 259, 272–75,
281–83, 287–301, 310, 317
architecture, 273, 292–99
body ornamentation, 299
burials, 292–99
lithics, 274
pottery, 273, 299
subsistence, 290–92
- Black Sea, 269, 309, 310, 320
- building continuity, 220, 228
- Burdur Plain, 193–211, 290
survey, 196–99
- burial practices, 2, 10, 25, 29, 49, 68,
69, 79, 88–89, 95, 220–21, 225,
226, 252, 273, 275, 277, 283, 293,
310–11, 320
beneath floors, 10, 95, 142, 275
of buildings, 221, 313
at Çatalhöyük, 175, 185
- burning of buildings, 233–34
- Çanakkale, 264, 271
- Can Hasan, 164–65, 180–82, 184–85,
- Çatalhöyük, 3–7, 9–10, 23, 31, 71,
77–96, 137–60, 163–86, 194, 205,
207, 220, 223, 225, 226, 289–90,
292–96, 298–300
body ornamentation, 92–93
burial customs, 88
chronology, 157–58

Çatalhöyük, *continued*

- East, 5, 7, 10, 138–39, 144–58, 163–66, 173, 178, 180–81, 182, 184–85, 293
- figurines, 89, 95, 144–46, 298
- houses
 - late classic, 143–50
 - light dwelling, 153–54
 - multiroom, 154–57
 - solid, 150–53
- nuclear family, 79, 83, 95
- phasing at, 138, 141–43, 173
- water supply, 85–86
- West, 124, 163–72, 175, 180, 182–85, 293
- cattle, 6, 7, 10, 19, 22, 26, 29, 63, 93, 145, 152, 159, 178–79, 184, 203, 223, 225–26, 241–42, 249, 251, 262, 274, 283, 290–92, 294, 300
- wild, 159, 178
- cave sites (Antalya), 309
- Çayönü, 22–23, 89, 220, 226
- cereals, 7, 18, 19, 22, 25, 29, 30, 93, 169, 178–79, 197, 203, 221, 253, 260, 292, 311
- Chalcolithic, 4, 5, 12, 25, 42, 47, 48, 69, 70, 104, 124–25, 163–64, 185, 197–201, 206–9, 211, 259, 272, 275, 27, 289, 322
- chipped stone industry, 67, 168, 172, 177–79, 258, 262, 269, 271, 275, 280–81, 283
- chronology, 24, 106, 107, 157–58, 170, 209
 - absolute, 166
 - radiocarbon, 21
 - Upper Mesopotamia, 107
- climate change, 6, 29, 41–42, 47, 120, 166, 184
- concealing processes, 194, 200–201, 211

- courtyards, 8, 64, 81–83, 85, 88, 93–95, 142, 153, 158, 207, 209, 228, 242, 244–46, 248, 251–52, 273–74, 282, 293
- Cyprus, 26, 64, 86, 225
- Dead Sea, 28, 31, 33, 41, 41
- Demircihöyük, 239, 300
- domestication
 - of animals, 1, 18, 137
 - of aurochs, 118
 - of cattle, 283
 - of goats, 22, 46
 - lack of, 203
 - of plants, 1, 22, 137
- Early Bronze Age, 199, 201, 288–89
- elites, 25, 123, 313
- entanglement model, 113, 208, 257–66
- Epipaleolithic, 70, 308–9
- Eskişehir, 271, 300
- exchange, 10, 12, 18, 22, 25, 27, 67, 109, 123, 182, 206, 229–30, 262, 265
- expansion (of sites), 25, 54, 115, 120–21, 271, 309–10, 312–13, 316, 320
- farming economy, 7, 241–42, 281
- figurines
 - anthropomorphic, 65–66, 79, 89–92
 - Aşağı Pınar, 323
 - Balkan, 299
 - Barcın, 274, 297–99
 - Çatalhöyük, 89, 95, 144–46, 298
 - Hacılar, 298
 - Kfar HaHoresh, 65
 - Nahal Hemar, 24
 - pebble, 90–91
 - Pendik, 280

- phallic, 313
- Sha'ar HaGolan, 64–65
- Uğurlu, 259
- Ulucak, 227, 229–35
- Yarmukian, 64, 89–90
- zoomorphic, 65, 245
- Fikirtepe Culture, 10, 274, 281,
 - 288–90, 310–12, 317, 322
 - dating of, 280
 - lithics, 281
 - pottery, 281, 311, 318
- fishing, 7, 281, 283, 320–21
- floors
 - burial beneath, 10, 95, 142, 275, 283
 - clay, 274, 316
 - dirt, 5, 54
 - mud, 248
 - painted, 221, 226, 234, 296, 301
 - paved, 81–82
 - plaster, 24, 26, 45, 145, 151, 153, 167, 209–10, 221–22, 226, 233–34
 - red, 209, 296–97, 301
 - sunken, 258, 279–80
 - terrazzo, 233, 313, 316
 - wooden, 8, 243, 282
- Girmeler, 233–34, 316
- Göbeklitepe, 220, 313
- Gökçeada, island of, 7, 10, 258–65
- Greece, mainland, 263, 308–9, 322
- Greenland ice core, 28
- Gülpınar, 317
- Hacılar, 8, 89, 124, 164, 183–84, 193–212, 233, 259, 289, 292, 296, 298, 316
 - pottery, 209
- Halaf, 3, 5, 8, 10, 31, 102–4, 106–8, 113, 116–26, 307
 - pottery style, 101, 122–24, 182
- Halaf-Ubaid Transition, 104, 107, 125
- hiatus palestinien*, 61, 71, 109
- Hoca Çeşme, 11, 288, 289, 296, 316–17, 321–23
- Holocene, 6, 7, 17–21, 61, 106, 206, 210, 309–10
- horns, 27, 179, 274, 294–96
- houses, 11, 18, 20, 22, 23, 25, 221
 - 'Ain Ghazal, 45, 54
 - Barcın Höyük, 273, 282, 292–93, 298, 300
 - boundary, 249–51, 254
 - Çatalhöyük, 137–60, 174–75, 223
 - “grill-plan”, 22
 - Hacılar, 202, 207
 - Jordan, 49, 51
 - lineage, 220
 - modular, 95
 - mud-slab, 222, 227, 242, 243, 274, 310–11, 320, 322
 - multiroom, 1, 22, 142, 150, 158
 - northwest Anatolia, 243–44, 247–49, 251, 254
 - post-wall, 242–43, 247, 248
 - rectangular, 7, 22, 227
 - Sha'ar Hagolan, 80–85
 - single-room, 5, 8, 54
 - Ulucak, 226–28, 234–35
- Höyücek, 8, 193n1, 195, 199, 200, 203–6, 289, 292, 316
- hunter-gatherers, 17–19, 21, 22, 26–27, 69–70, 242, 248
- Ilıpınar, 7–8, 241–42, 245, 248n4, 251–52, 254, 277, 282, 283, 288–89, 293, 310–11, 315, 317
- İnegöl, 310
- irrigation, 104, 166, 200, 205
- İznik, 310
- İznik Lake, 241–42, 245, 252n6, 274

- Jericho, 20, 23, 25, 30, 31, 41, 45, 61, 63, 69, 93–94
- Jordan, 22–27, 31, 41–55, 61, 64, 79, 83, 196
- Karanovo culture, 262, 317, 322–23
- kinship, 44, 83, 138, 208, 245n2
- Konya Plain, 9, 79, 194, 207, 290–92, 294, 296, 300
- Kurdistan, 105–6, 123
- Kuruçay, 8, 183, 193n1, 194–99, 202–5, 210
- Lakes District, 3, 7, 8–10, 183–84, 282, 284, 288, 290–92, 296, 298, 300, 320
- Levant, 2–6, 9, 11, 17–33, 41–55
 northern, 18, 20, 22, 26, 31, 101, 107–9, 111, 114, 122
 southern, 2, 5, 9, 11, 18, 26, 28, 31, 41–55, 93, 109
 burial customs, 68–69
 chipped stone industry, 67
 exotics, 67
 pottery, 65–67
 ritual, 68–69
 site organization, 64
- lithics, 25, 67,
 Black Sea, 309
 Burdur Plain survey, 201, 206, 210
 Çatalhöyük, 166, 177–78, 182, 185
 Hacılar, 209
 Marmara Region, 289, 300, 311, 320, 323
 Öküzini type, 309
 Ulucak V, 227
 Yarmukian, 62, 67
- Lodian settlements, 31, 62, 68, 69
- Marmara Region, 10, 184, 204, 242, 245, 252, 287–90, 296, 300–301, 310–12, 316–18, 322
- Marmara, Sea of, 308–10, 317, 318, 320, 323
- megasites, 43–47
- Mellaart, James, 79, 92, 139–42, 148, 163, 164–65, 173, 193n1, 202, 208, 209, 273, 274
- Menteşe, 7–8, 245, 248n5, 251, 272, 283, 288, 289, 310, 317
 architecture, 274
 burials, 275
 pottery, 274–75
- Mesolithic, 269–70, 281, 288–89, 300, 308–10, 312, 320
- Mesopotamia, 101–26
- mortuary practices. *See* burial practices
- mound sites, 193–94, 206, 210
- Nahal Hemar cave, 23, 24, 66, 69
- Neolithic Package, 263, 287, 307, 308, 310, 312, 315, 317–18
- Neolithic Revolution, 1, 17–18, 20, 41, 137, 159
 Second, 166, 183–84
- neolithization
 primary, 3, 315
 of northwestern Turkey, 263, 269, 271, 281, 284, 287, 290, 301, 307, 323
 secondary, 312, 315
 of southern Europe, 323–24
 of western Turkey, 210, 221, 263
- networks/networking (social), 5, 9, 101, 118, 125, 232, 263
- Nevalı Çori, 220
- nuclear families, 25, 32, 79, 81–83, 88, 93–95, 249
- obsidian, 18, 25, 67, 145, 168, 176–77, 182, 262, 274, 279–80, 298, 300
 Cappadocian, 10–11, 262, 279, 300
 from Göllüdağ, 262

- Melian, 225, 227, 262, 309
- pastoral economy, 4, 27, 46–47, 54–55, 70–71, 118, 137, 262
- Pendik, 7, 272, 275, 279–83, 288–90, 299, 310–11, 315, 317, 320, 322
 - figurines, 280
 - huts, 279
 - pottery, 279
- pigs
 - domesticated, 22, 178, 290, 300, 312
 - on Cyprus, 26
 - in economy, 7, 199
 - at Hacilar, 203
 - lack of, 262, 291
 - in the Levant, 29, 63
- pintaderas, 280, 289, 315
- platforms, 8, 50, 81, 88, 111–12, 138, 142–45, 148, 150–51, 153–54, 156–57, 251, 274, 275, 279, 282, 293–94, 301, 320
- population growth, 22, 46
- population pressure, 77–78, 92, 95
- pottery
 - Aktopraklık C, 275–78
 - Aşağı Pınar, 320
 - Balikh Valley, 108–11
 - Barcın, 273, 299
 - Burdur Plain, 199–200
 - Çatalhöyük, 167, 171, 173, 175
 - Fikirtepe-type, 281, 311, 318
 - Gelveri, 10, 182
 - Hacılar, 209
 - Halaf, 101, 122–24, 182
 - Hoca Çeşme, 321
 - Levant, 65–67
 - Menteşe, 274–75
 - movable, 113
 - painted, 8–9, 65, 107, 109, 118, 122–24, 165, 166, 168, 175, 176, 180–84, 200, 209, 262, 294, 317
 - Pendik, 279
 - proto-Hassuna, 183
 - Shir, 109, 119
 - Ubaid, 101
 - Uğurlu, 258, 262
 - Upper Mesopotamia, 107, 108–12, 118
 - Yarımurgaz, 319
- prestige goods, 32, 67, 109, 313, 315–16
- querns, 145, 223–25
- radiocarbon dates/dating, 30, 49, 51, 107, 165, 169, 170
- ritual, 4, 9, 24, 43, 44, 68–69, 77, 108, 109, 117, 185, 208, 209, 220, 221
 - abandonment, 174
 - cattle skull and, 294
 - feasting, 220, 225–26
 - figurines and, 298
 - red floors and, 297
- Sakarya River, 310, 320
- scalar stress, 43, 77, 79
- seafaring, 11, 26, 262, 263–65
- seals, 29, 89, 114, 118, 227, 230–35
- sedimentation, 47, 106, 114, 200, 201
- settlement nucleation, 194, 208
- settlement patterns, 43, 63, 105, 111, 194, 199, 201, 206–7
- Sha'ar Hagolan, 6, 22, 31, 32, 64–65, 67, 70, 77–96
 - anthropomorphic figurines, 64–65
 - architecture, 64
 - body ornamentation, 92–93
 - burial customs, 89
 - community, 95–96
 - extended family, 94–95

- Sha'ar Hagolan, *continued*
 figurines, 89–92
 houses, 80–85
 nuclear family, 82, 93–94
 passageways, 83–85
 site organization, 64
 water supply, 86–88
 sheep and goat, 7, 29, 44, 46, 47, 55,
 63, 93, 178–79, 204, 242, 251, 283
 Shir, 102, 106–7, 114, 118
 pottery, 109, 119
 site location, 27, 103, 108, 114, 282
 skull cult, 23–25, 43, 68–69, 89, 145,
 221
 social memory, 313–17
 subsistence economy, 54, 205, 249,
 283, 288, 291
 symbolism, 64–65, 158, 178, 219,
 234, 313

 Tell Sabi Abyad, 6, 7, 28, 29, 102,
 110–20, 124
 Thrace, 11, 287–88, 308, 312, 316,
 317–18, 322, 323
 transformation, 1–2, 83, 299
 agricultural, 5, 102
 cultural, 7, 116, 120, 125, 137, 221

 Ubaid period, 104, 107, 121, 125
 Uğurlu, 7–8, 10, 258–64, 288, 289,
 317, 322

 Ulucak, 3, 7, 184, , 209–11, 219–35,
 259, 289, 296, 316
 architecture, 221–27
 construction of identity at, 227–33
 houses, 226–28, 234–35

 visibility (of sites), 106, 114, 194,
 196–97, 199–201

 Wadi al-Qattafi Mesas, 49
 Wadi Rabah stage, 4, 31, 69–70
 water, 6, 23–24, 32, 48, 50, 53, 79, 85,
 85–88, 108, 114, , 117, 122–23, 184,
 193, 196, 202, 203, 205, 206,
 Wisad Pools, 49–53
 workshop
 at Bozköy, 182
 at Uğurlu, 258
 at Barcın, 297–99

 Yabalkovo, Bulgaria, 323
 Yarımburgaz, 312, 317, 319, 321
 Yarmukian culture, 5, 31, 54, 61–71,
 79, 89–91
 Yenikapı, 271, 288–89, 299, 310–11,
 317
 Yenişehir Plain, 245, 273, 274, 292,
 296, 310

 zooarchaeology, 178, 290